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*Illustrated.

The Rubber Failures.

WITHIN a month or six weeks failures to the extent of $2,000,000 have occurred in the rubber trade. Five manufacturing establishments have failed for an aggregate of $1,000,000.

Doubtless the causes of these failures do not all appear on the surface, but some of them are plain enough. In the first place and prominent among the conditions leading to failure is the attempt to do business on insufficient capital. In the rubber trade in which the tendency is to a liberal extension of credit, any attempt to do a business incommensurate with capital and upon other people's capital is especially dangerous; some strict moralists might even call it dishonest.

The banks have co-operated with those who have made such attempts by permitting and aiding them to float manufactured paper, and so have enabled them to pursue such a course at the risk of a crash whenever all the conditions for a break should become established. In the course of events, this was sure to be the case some time. That time, it appears, has come, and the sure result has followed.

So large a number of failures occurring within so short a period is unprecedented in the rubber trade, which has, when its magnitude is considered, been signally free from such overturnings as compared with many other great lines of industry. It is greatly to the credit of the trade that it has acquired the reputation of stability as one of its most prominent characteristics. In former financial crises great and small, it has withstood, without wavering, shocks that produced widespread disaster in other lines.

The attempt to gain trade by underselling the market, and, to this end, the degradation of quality in manufactured articles, is another potent cause of trouble, which has doubtless been more or less a factor in the recent failures. A common effect of such an attempt on the part of any individual firm, is to influence some other equally fatuitous competitor to do likewise. It is a disease that is "catching," resisted only by concerns that have sound constitutions and enjoy the best of health. The constitutionally feeble and the debilitated are almost sure to take infection. When once acquired there seems as little hope for a cure as in a case of small-pox. There are no remedies. The disease must run its course either to a fatal termination, or to a natural recovery which, however, even if so fortunate an outcome follow, never leaves the patient free from unsightly scars.

The course of the disease, or what the doctors would call its "prognosis," has been many times exemplified and is easy to delineate. The beginning may be so full of deceitful promise that it seems to indicate an increased flow of health. Sales may be large and business encouraging. But soon epidemic force is apparent. Some one else has cut prices, and prices must again be cut. A further deterioration of quality must be made. So it goes on, prices and quality become lower and lower till at last the goods offered are dear at any price, and the life of the business is threatened. This is the last stage of the malady, usually fatal.

Some few not having exhausted all vitality may slowly recover, but they never can efface the "marks."

Sound methods of doing business are always based upon the principle of *quid pro quo*. That is to say they always contemplate giving to the purchaser in cost value *plus* reasonable profits the entire worth of his money. The question of what are and what are not reasonable profits is decided upon well-recognized principles, and is not a matter of caprice. It depends upon many things, among which are considerations of general and special risks in business, the value of patented inventions, interest on invested capital, expenses, etc., which may justify a larger percentage of the cost price on some articles than upon others, or render it proper to charge a larger percentage of profit in some transactions than in others. But neither real value nor profits are ever lost sight of, in establishing prices. When goods are placed on the market of a quality dear at any price, or when they approach this point, the underlying principle of equivalents is violated, and the firm that attempts this method of doing business will require very careful piloting to avoid going upon the rocks.

These recent failures are significant only as again enforcing oft repeated lessons. The soundness of the rubber trade will only be increased by disappearance from it of inferior goods, inferior methods, and firms whose financial foundation was never rigid. This purging process having been going on for some time and accelerated by recent money stringency has, probably with other causes not apparent, resulted in the collapse of the concerns involved.

The Trenton failures exemplify the folly of attempts at forming business combinations to control prices, out of incoherent or conflicting interests and without some comprehensive, far-seeing mind, controlling will and transcendent executive ability at the head.

Foreign Markets Seeking Our Manufacturers.

IT would seem an easy matter to extend the rubber trade in foreign markets, since trade is seeking us. Evidence of this seeking now lie on our table, in two letters, one from Sydney, another from Copenhagen, which are samples of letters received from time to time at our office.

Our Sydney correspondent wants to get into communication with American manufacturers of inflated horse-collars, if such there be, having, as he says, had a number of calls for them. The Copenhagen inquirer seeks addresses of manufacturers of leather belting and of rubber goods

We have persistently advocated the practicability of increasing the export trade in rubber goods. How to cultivate foreign trade was editorially discussed in our last issue. Useful hints directly applicable to the qualifications of salesmen sent abroad are contained in an article printed elsewhere in this issue entitled Commercial Travellers in South America.

Probably it is of as much importance to know how to retain a market as to know how to get it. The observance of the fundamental principle of trade enunciated in another column in our comments upon recent failures, is the most important condition of keeping a market. Integrity of quality in goods is indispensable.

Not many years ago English manufacturers of cotton goods came near ruining valuable markets for such goods in the East, by sending to these markets miserable, sleazy, light weight goods loaded with size to give them artificial weight, and the appearance of better cloth. These markets have never been the same to them since. Lost confidence is not easily restored. If, as a celebrated English statesman once remarked, "confidence is a plant of slow growth," it is certainly also a hard plant to nurse back into vigorous life when its roots have been cut by commercial deceit. A case in point occurs to us.

The late B. T. Babbitt, the famous and wealthy manufacturer of soap, established his business on the basis of strict commercial integrity, and his name was always honored among New York merchants. Some twenty years before his death, he made the European tour, leaving at the head of his business a young man of great energy and executive ability, but, as the sequel will show, of rather elastic principles. It was arranged with this deputy that in addition to his regular salary he might have during Mr. Babbitt's absence a certain share of all the profit of the business, whereupon immediately, as soon as his chief was out of sight, he put into practice a scheme of adulteration of the soap without a corresponding reduction of price. The soap selling freely upon the strength of its former reputation, the immediate returns were large, and the profits(?) divided unto the enterprising schemer from this selling out of his chief's business, were, before Mr. Babbitt's return, enough to enable the trusted agent to retire with sufficient capital to start and conduct a large manufacturing business of his own. In narrating to the writer this disagreeable episode not many years after its occurrence, Mr. Babbitt said it cost him nearly a quarter of a million of dollars to remedy the injury to his business thus effected by a few months of sharp practice. He sent to his customers, all over the United States, letters requesting a return of the inferior goods, which he replaced with those of standard quality, and by a judicious but enormous expenditure in advertising gradually recovered the lost trade.

This incident, full of instruction, has so far as the writer recollects, never before been published. It reflects honor upon one of the best hearted, most genial, and upright business men who ever honored New York City by residing in it, else it had not been told.

It is seldom that any business having as a basis a wide, substantial and constant demand, when organized with sufficient capital, wisely and honorably conducted and supplying such demand with honest goods, comes to grief.

Vianna as a Public Benefactor.

A SPECULATOR'S plans are as a matter of course selfish. It oftentimes happens, however, that prices that are almost prohibitive so stimulate invention that means are employed for reaching desired ends that would never have

been thought of had not necessity required. So it is to-day in the rubber business. With the price of Pará so high that the profits are cut off completely from many goods, there has been a persistent seeking for some way out of the trouble. The way has been found in a measure. All manufacturers agree that rubber is rubber whether it is from the Amazon or the Congo. The one is skilfully gathered, is more easily manipulated, and is more certain in its results. Good results have, however, often been gained by the use of the coarser gums, and with this fact strongly in mind there has been for some time past a deal of study and experimentation with rubber of the baser sort. Nor has it been fruitless. In many cases, where even five years ago it would have been deemed an impossibility, lower grades are used with the best of results. It is not a strong statement to make that to-day the manipulation of coarser rubber is more of an exact science than ever before. The fact that these gums can be of so much use, can supplant Pará, is due to the persistent efforts of Vianna in keeping the price up, as well as to the general feeling that even if there be a drop it will only be temporary. The Baron therefore without intention is the means of stimulating not only the use of other rubbers than Pará, but is responsible for the renewed interest that is taken in a better method of gathering and curing these gums.

Aluminum in Connection with Rubber Work.

SO many inaccurate statements have been made concerning aluminum that a reaction is setting in, and peoplet are not as much carried away by the mention of this strange metal as they were a short time ago. It however will have its uses in rubber work, and important ones, before a great while, without question. In many places to-day where brass and copper are used in connection with rubber, and where the latter particularly is a decided disadvantage, if only aluminum were a trifle cheaper, it could and would be used with great advantage. Certainly to the rubber boot men were aluminum anywhere near the price of brass, it would be a most excellent thing, for one who has spent a great deal of time upon the study of rubber boots has already perfected an aluminum boot tree that is a beautiful piece of work. It is lighter than an ordinary wooden tree, not because the metal itself is lighter than wood, but because it can be made hollow, and yet at the same time stronger and far more durable than the best wood tree that ever was made.

The price of aluminum to-day, in spite of various advertisements, is $1.50 a pound. The metal sold at this price is practically pure. The trouble with aluminum that is advertised for less price than this, and which is manufactured by parties who are not really reducers of the ore, is that it is alloyed with baser metals, and so loses much of its value. At the same time, it is perhaps only just to state that from three to five per cent. of copper in aluminum would make it more valuable for the rubber trade than if it were absolutely pure.

Although aluminum is found in many clay deposits, and is the most plentiful of our metals, it is not easily obtained from most clays. What is known as bauxite, which when treated with carbonate of soda, forms an aluminate of soda, that when lixiviated in water, forms a white precipitate; is bought by the reduction works of this country; and used by them in that form. In this country there is plenty of bauxite; indeed in South Carolina there are large deposits of it but thus far it has been thought cheaper to get the German article. Bauxite delivered in this country costs about five cents a pound, after paying an import duty of sixty cents a hundred.

Speaking again of the properties of aluminum, its color is white with a delicate tinge of blue; and perhaps it looks more like silver than any other metal. It polishes beautifully, and can be rolled or forged almost as easily as gold or silver, and may also be beaten into very thin sheets. Its elasticity and plasticity are about the same as silver; but under a hammer it changes remarkably. A bar of aluminum weighing a pound would be four times as large as a bar of iron, tin, bronze, brass, or silver of the same weight; and this should be taken into account when reckoning the cost of it. As a conductor of heat, it excels any other metal; and as a conductor of electricity, it is about eight times better than iron. That the question of its being manufactured commercially at a price that will allow it to be used in places where it cannot go now, and particularly in connection with the manufacture of rubber goods, is only a question of time, and a short time at that.

—The American Rubber Co. has caught some large orders from Chicago for clothing. This gentle wafting in of orders from the West is a bright contrast with the cloudy hue of these dull times so commented upon in the street. The American is selling a good quantity of the "Goodyear's" to the trade. The factory is running full.

—The New Brunswick Rubber Co. have lately put on the market a cheap shoe called the "Columbia." It is a very fair article for the cheap price at which it is offered. The "Dauntless Storm Over" is having a good run.

—One of the chief reasons for the dull times on the street is the near approach of the usual stock taking by the jobbers. The less stock on hand the easier that job will be, and they can operate more intelligently, after that inventories are made, which is shortly after July 1. This year an assurance is given that prices will not be advanced on boots and shoes. Heretofore it has been the habit to give notices of intended advances during the summer months which served to stimulate purchases in anticipating such advances. Now the jobber can postpone purchases until later in the season, which will give him a better opportunity to gauge his actual wants.

—The Woonsocket Rubber Co., of Woonsocket, R. I., which has just completed its new Alice mill to have a capacity of 30,000 pairs of shoes per day, intends lighting the same by electricity throughout. A contract has been closed with the Edison General Electric Company, and calls for two Edison compound dynamos, each having a capacity of 540 sixteen candle-power lamps and one compound dynamo having a capacity of 180 sixteen candle-power lamps, giving a total of 1260 lights.

—A sale of 20,000 pounds of Pontianic gum was made the other day. It is a very inferior grade and the incident only served to mark a possible fad that available grades of a better quality are too scarce and too high when a substitute can be used.

New Goods in the Market.

TO MANUFACTURERS AND PATENTEES:

It is our aim to embody in this department descriptions and illustrations of all the latest novelties introduced in the market, to the end that jobbers, retailers and buyers of rubber goods generally may look here for information as to everything new that each month or season brings forth. Manufacturers and patentees are, therefore, most cordially invited to co-operate with us in making the department as complete and attractive as possible—the distinct understanding being that no charge whatsoever, either direct or indirect, will be made for these publications. Our reward will come through giving our readers valuable information; and that will be reward enough if manufacturers but give the information freely and in all cases at the earliest practicable moment.

In forwarding descriptions of new goods, be careful to write on one side of the paper only; be brief, but always write enough to give the buyer a clear idea of the article you offer; give your full address, plainly written; and in all cases send a small illustration or wood cut if you have one.

HOSE will burst, and Yankee ingenuity has devised many methods of mending it. One of the best is that herewith illustrated, for which are claimed the following advantages: It has a ratchet thread which will stand more pressure than any other form of thread. It can be quickly applied without the use of tools. It can be used for joining new or mending old hose. It has a thread which leads from small to large both in size and

depth, which makes it very easy to apply. It has a recess in the middle of the mender which makes a smooth joint in the hose and gives it a firmer hold. And best of all, when applied it in

no way obstructs the flow of the water through the hose. Patented and manufactured by M. D. Jones & Co., 76 Washington Street, Boston, Mass.

—What with bells on horse cars and electric cars, on bakers' carts, and on drays, the bell as a warning that a bicycle is coming is not a decided success. An unusual note of warning is

needed, and is given forth by the attachment known as the "Cycle Horn." It consists of a neat nickel plated horn that gives out a mellow note that is very far sounding. Instead of using the breath to produce the sound, a rubber bulb is attached to the horn, and pressure upon it does the work. The horn is arranged so that it can be permanently attached to the bicycle within easy reach of the rider's hand. Manufactured by John P. Lovell Arms Co., Boston, Mass.

—The accompanying cut gives a clear idea of a new Vaginal and Rectal Syringe invented by Dr. H. G. Leisenving, of Wayne, Neb. It is made entirely of hard and soft rubber. The nozzle is of hard rubber in two parts. The rectal tip screws into the vaginal tip which is conical in shape, and when pressed into the vaginal opening closes it completely, so that medicated or hot water injections can be administered in any position without using a vessel and without leaking or soiling the clothing. The bulb is composed of one piece of soft rubber, one-half being a firm, thick, ribbed part, and the other half being thin and flexible. In using the syringe the thin part is pushed or doubled into the firm part, thus forcing all the fluid into, and distending the vagina. On drawing the flexible portion out, by means of the hard rubber ring handle, the fluid together with all discharges is drawn out into the bulb by the suction force. The handle is also used to suspend the syringe thus draining it and prevent rotting of the bulb. This syringe will be sold by druggists and instrument dealers generally.

—Rubber is combined with a host of different fabrics in making packings and in none has it given better results than when combined with flax. What is known as the "Square Flax" is here shown. This packing is square, braided from the best quality flax roving, and is treated with a special lubricating

compound, which, combined with the well-known wearing qualities of flax and its solid square shape has given consumers a perfect pump packing. It is also prepared with a plumbago

lubricant, and with an elastic gum centre, in which form it is giving the best results as a steam packing for high speed and high pressure engines. Manufactured by the American Steam Packing Co., Kilby Street, Boston, Mass.

—The cut shown here gives a good idea of a new and popular shoe known as the Emperor when made for men, the Empress when made for women. It is gotten up for fine city trade. It

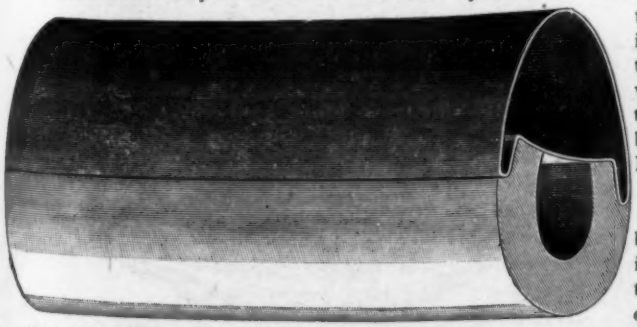
is made of the best rubber stock, with an upper of Jersey cloth. The straps which are a feature of the shoe are made of elastic material, and are fastened by means of button and button holes. Manufactured by the Wales-Goodyear Rubber Co.

—"This shoe should be promoted to Major-General," writes one who finds it a popular seller. As it is now called the Captain the force of his compliment is very apparent. It is made with cashmerette top, rubber vamp and furnished with one

WALES GOODYEAR.

automatic buckle and two straps. Manufactured by the Wales-Goodyear Rubber Co.

—Now that the cycle riders are numbered by hundreds of

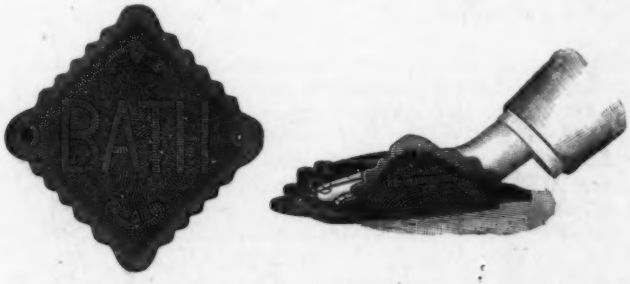


thousands, the amount of thought and work that is put upon each part of the perfected machine is simply marvellous. The rubber tire especially has been the object of an immense amount of experiment and study. One of the best of the tires yet produced is the Victor Cushion Tire, shown above. It is a simple arch of rubber extending from edge to edge of the rim. Its side walls are held against spreading by side flanges having rounded edges which also the tire is constructed to cover and protect. The bases of the tire rest upon a horizontal rim-bed which aids materially in giving lateral stiffness to the tire and strength to the hollow rim. It is evident that the rubber must displace *inwardly* under pressure. The movement of the rubber is therefore almost wholly radial, which fact accounts for the great elasticity of the Victor cushion tire, and, moreover, allows the use of rubber of the proper degree of toughness and density for cycle use. Manufactured by the Overman Wheel Co., Chicopee Falls, Mass.

—A new fountain pen that has the merits of simplicity and cheapness is shown above. It is practical, durable and cheap.

The outside casing of the holder and reversible cap are a fine imitation of hard rubber which gives it an attractive appearance. It is simple in construction, easily filled and adjusted, and being lined throughout with nickel and furnished with a non-corrosive pen, it is always cleanly. Price 25 cents sent by mail. The Stopford Fountain Pen Co., C. G. Hinman, Manager, 7 Exchange Place, Boston, Mass.

—Almost the first use to which rubber was put was in cleansing paper from pencil marks. While dry rubber either vulcan-



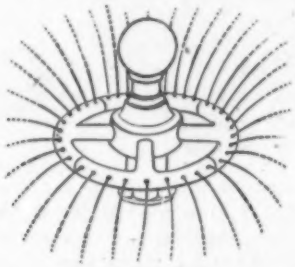
ized or unvulcanized would be a harsh article to use on a human being when wet, particularly with soapy water, it is far from being unpleasant. Workmen in the rubber mills have for years used rough pieces of Pará rubber for wash cloths. An adaptation, nay a vast improvement over this crude idea, is well shown in the pictures above. In this case the rubber is moulded so as to present hundreds of tiny points that are soft as silk, and while they quickly and thoroughly cleanse the hand, are entirely free from the harshness of the best bristle brushes. The brush is simply buttoned over the hand, when it is ready for use. Manufactured by the Elastic Tip Co., Boston, Mass,

—The utmost safety as well as superlative luxury in sea-bathing is illustrated in the accompanying engraving representing the Neptune Life-saving Bathing Suits, manufactured by the Crescent Co., 100 Wooster Street, New York City. It makes one long for the summer days, the cool sea breezes and flashing surf, to look at this picture, all of which will soon be enjoyed by those who can reach them. But none will enjoy them so

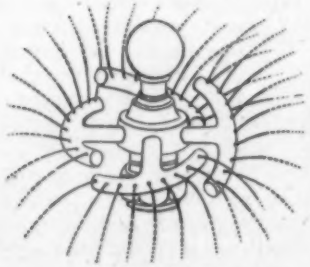
much as those who provide themselves with these safe and elegant garments, which by the attachment of an inflatable rubber chamber to the dress passing around the bust underneath the arms, renders it possible to float in an erect position

for any length of time in safety and without fatigue. If these suits do not meet with astonishing sales this season the fault will not be in the dresses, but in the want of good judgment on the part of purchasers. The rubber chamber is placed between a double thickness of the dress, and is inflated when desired by a tube attached at the neck. When inflated it does not interfere with perfect freedom of motion.

—Stationary and revolving lawn sprinklers are to be seen everywhere at this season of the year. One that can be used

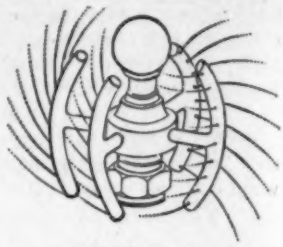


POSITION NO. 1.



POSITION NO. 2.

for either purpose is shown in the four cuts accompanying this article. Position No. 1 shows the sprinkler head so arranged as to play a spray and not revolve the distance of spreading, the water being governed by the pressure. It will play from every point of its circumference the same distance as any spray hose nozzle under corresponding pressure. By moving the arms to position No. 2 it will revolve and throw the water equal in distance

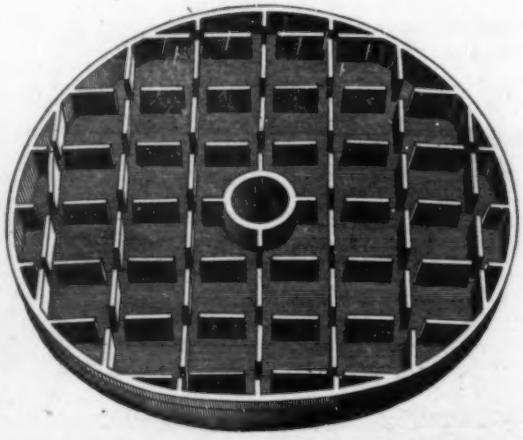


POSITION NO. 3.

to any four-arm lawn sprinkler and distribute it very evenly. A third manner of adjustment is shown in position No. 3, which shows the sprinkler revolving at its greatest speed, and makes a very pretty and effective water display. These are but a few of the combinations that may be made with this sprinkler. It is also very strong, durable and convenient. Manufactured by M. D. Jones & Co., 76 Washington Street, Boston, Mass.

Anything that will make life easier or safer for firemen should have the seal of public approval. Fortunately as is

demonstrated by the voice of the press, municipal appropriations for engine-houses, for fire-departments or appliances are nearly always approved, because popular feeling is always on the side of the brave fellows who are ready to turn out at a



moment's notice, to meet instant and dreadful emergencies. When a fireman half dressed and in a desperate hurry slides

down the pole in the engine house and strikes an ordinary rubber mat, or even an inflated pad that may burst, he gets a jar that is injurious. Numbers have been injured in this way. To obviate all danger a self-inflating landing pad has been invented that is well explained by the cuts that are here shown. Each of the blocks of rubber under the face of the pad acts as a spring, and while all give they do not allow the air partially to escape, and the cushion is perfect. It cannot be burst and is always inflated. Manufactured by the Peerless Rubber Mfg. Co., 15 Warren Street, New York.

The Bicycle Tire of To-day.

THE application of rubber to wheel tires has proved a great boon to bicyclists, and the increase in this branch of industry is remarkable. There are 100,000 bicycles made every year in this country and 40,000 more are imported. As all these have tires of the best rubber it can be seen that a good percentage of the world's supply is absorbed in this way. Each tire weighs on an average between three and four pounds, and this together with renewals involves a yearly consumption of not far from 1,000,000 pounds. The solid tire was first used, but the cushion and the pneumatic are now the popular forms, Each of these, however, is being further modified and improved, and the comfort of bicycle-riding is being daily increased. The cushion tire is not liable to puncture and takes the jar well, but its weak point at present is its liability to crack at the sides in the interior. The pneumatic consists of a rubber tube jacketed in a stout canvas sack, which prevents its being burst from over-inflation and other accidents. The whole is covered with a large incasing tube of rubber. The canvas sack is cemented to the outer rubber tubing, and the interior is inflated by an air valve. This form of tire, which is not yet perfected, has the advantage of being easily repaired by the rider in a few minutes by the roadside. The repairing outfit consists of a hidden pressure tube filled with quick-drying solution, rubber for patches and a supply of canvas. These adaptations of rubber enable the rider to travel long distances day after day, with but little ill effect from the concussion which once affected so materially the health and comfort of the bicyclist.

A "Cotton Hose" Rhapsody.

SHE'S fairer than a lily,
And she's sweeter than a rose,
And she knocks the neighbors silly
When she wields the garden hose.

She lifts her skirts from danger
With her left hand, while the right
Grasps the nozzle, and the stranger
Gets a very pleasing sight.

For she's always fresh and rosy,
And she seems so sweet and fair,
As she sprinkles every posy
With the most impartial care.

The neighbors' eyes all twinkle,
And their interest daily grows,
For they like to see her sprinkle,
And they like to see the hose.

—*Somerville Journal.*

Letters to the Editor.

About a Double Calender.

BOSTON, April 23, 1891.

EDITOR INDIA RUBBER WORLD: Will you kindly give in your valuable columns some information regarding a "Double Calender"? I mean a calender which coats both sides of the cloth at the same time. Such an one, I think, was patented some time ago, but I have seen nothing of its being anywhere in operation. J. T. A.

[A calender such as our correspondent mentions is in use in one of the large rubber shoe factories. It is a monster machine, like two calenders put together, and is said to be quite successful in its operation. If we are not in error the calender was built by the Birmingham Iron Works, Birmingham, Conn.—ED.]

A New Insulated Wire Compound.

EDITOR INDIA RUBBER WORLD: By long experiments and thorough experience in the insulated wire business, I now have a compound and know a way of insulating wire with it that excels every other one, or is at least as good as the best, and at the same time is one-third cheaper than the others. I would like to start in business with some rubber company that would like to change over to insulating wire. Will you be so kind and let me know what you think you could do for me, and what steps I should take myself?

Respectfully yours, M. W.

Wanted—A Place to Manufacture Hose.

MAY 20, 1891.

EDITOR INDIA RUBBER WORLD: I am desirous of finding a suitable place where I could make India rubber hose in either 25 or 50 feet lengths (50 preferred), and if possible would like to get somewhere where they had a hose spiral wrapper for wrapping the hose for vulcanizing. If I could rent table room and use of machinery I should prefer it, but I consider this as almost if not quite impossible to obtain. Otherwise, I should like to rent a factory near New York if possible, having the necessary machinery all ready. I think it possible that you may know of some rubber factory now standing idle, which could be rented at a reasonable figure. I have a specialty in the line of hose that I wish to manufacture, and if I could find a factory already equipped with the necessary machinery I would rent it at once. If you can give me any assistance in finding such a place, you will greatly oblige,

Yours truly, H. N. W.

Will the Manufacturer Please Answer?

LINCOLN, NEB., May 20, 1891.

EDITOR INDIA RUBBER WORLD: Can you give me any information about where I can get a small rubber device that is used in renovating feathers, pillows, etc.? I have seen them, and have a call for some. THE LINCOLN RUBBER CO.

Does Not Cure Quickly Enough.

EDITOR OF THE INDIA RUBBER WORLD: I have a small rubber factory; perhaps I had better call it a work room, in which I have three presses, and am gradually working into rubber mould work. I am troubled with some of my black compounds, because I cannot get them to vulcanize as quickly as they do in other factories. I am using 10 per cent. of sulphur, and do not like to increase that, as I am afraid it will injure the goods. Can you tell how I can overcome the trouble?

G. F. W.

[As the writer has not given us the compounds that he

does use, it will be rather blind work for us to try to criticise. It may be he is using such good compounds ; that is, that there is so much rubber in them, that it necessarily takes some little time for them to cure ; or it may be that he hasn't put in litharge enough, which is a mighty help in shortening the time of cure, and also makes an excellent compound. It may be further that his steam is not run high enough to do the best work for him. Another trouble that he may be having is that his presses are not right. We remember one case where the lower plate of a press held about an inch of water all the time because it was piped wrong ; that is, the steam entered through the outlet pipe; and the drip was forced to find its way out through what should have been the inlet pipe. If our friend will trust us with his compounds, which we will agree not to publish, we will very gladly criticise them for him, and give him any points that we may be possessed of.—ED.]

Elastic Bands.

EDITOR INDIA RUBBER WORD : Speaking of elastic bands. we have some put around papers in our store in 1861 which are as good as new.

Very truly yours, STUDLEY BROTHERS.

Providence, June 5, 1891.

Inflated Horse Collars Wanted.

EDITOR INDIA RUBBER WORLD : Being subscribers to your valued paper, which we read with great interest, we would like to ask you whether there are any manufacturers of inflated horse collars and saddle linings in your States ; and if so we would be glad to have them communicate with us, sending cuts and prices. We have been asked several times for these goods but do not know of any actually in use.

Yours faithfully, PERDRIAN & CO.

Sydney, Australia, April 14, 1891.

Brief Mention.

A CALL from Mr. J. H. Komescher of the firm of "J. H. Komescher & Co." has been one of the pleasant incidents of the month. Mr. Komescher says that he takes special interest in reading the department of "New Goods," from which he gains much knowledge of what is going on in the manufacturing world, directly applicable to the business of his firm, manufacturers and dealers in rubber goods at 161 Main Street, Cincinnati, Ohio.

—"The Thos. L. Johnson Co." formerly of 312 Dearborn Street. Chicago, inform us by letter that they have sold out to the "Chicago Rubber and Mill Supply Co." which will conduct its business in belting, hose, packing, valves, pulleys, rubber clothing, boots and shoes, at the same address.

—Three recent contracts for the "Baker Fabric Fire Hose" have been made with the cities of Toronto and Quebec, by the "Gutta Percha and Manufacturing Co.," of Toronto, Can., as follows : Two contracts respectively of 4000 feet and 3500 feet for Toronto, and one for 3000 feet with Quebec The total is nearly two miles in length of hose.

—The office of THE INDIA RUBBER WORLD has been removed from its former quarters on the 7th floor of the *World* Building, New York City, to new, larger and more commodious offices on the 10th floor, the entrance being at room 192. From these offices magnificent views are obtained of the cities of New York and Brooklyn, including probably the finest view of the Brooklyn Bridge to be had in New York.

Steam Heating Hose—An Interesting Case of Deterioration.*

THE illustrations of pieces of steam heating hose which we give herewith are direct photographic reproductions from the originals. They are of value in this, that they indicate very forcibly the need of careful watching of the material used for this purpose. Fig. 1 shows a view looking through a short section of hose ; Fig. 2 an inner view of a piece of hose of the same make which had not been "sponged" out as fully as that shown in Fig. 1, but indicating how the sponging out process commences, and Fig. 3 a view of the interior of another make of hose.

FIG. 1.

Fig. 1 shows the condition of a piece of hose which had been in the same service and for the same length of time as that shown in Fig. 3. The length of service was nearly three seasons with both makes. The hose shown in Fig. 1 has yielded readily to the action of the steam, has grown spongy and has swollen inwardly until the effective area for the passage of the steam has been very greatly reduced. Not only has this area been reduced, but an abnormal friction has been interposed against the free passage of the steam. The hose shown in Fig. 3 has practically maintained its original internal diameter and has maintained a smooth surface. It will be noticed that there is a considerable cracking in the inner surface of this piece, but although this cracking has here and there attained a considerable depth, yet the hose is in a vastly superior condition for

FIG. 2.

performing its functions as compared with hose No. 1. It is evident that the sponged out hose was not so effectually vulcanized as that shown in Fig. 3, but we suspect that the main cause of the retention of its proper condition by No. 3 is due to

*From *The Railway Master Mechanic*, May 1891.

the fact that the rubber in that piece of hose was adulterated. The rubber in hose Nos. 1 and 2 bears every evidence of being the pure article. We have here a case where adulteration is essential to the production of the best results. It should be

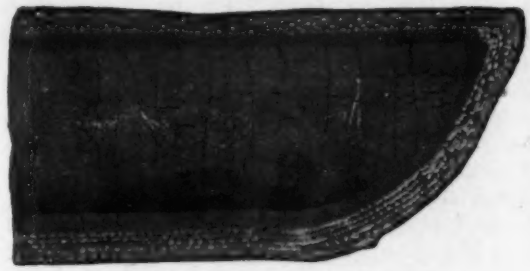


FIG. 3.

said that both these makes of hose were bought as the best obtainable hose, that the same price was paid for both, and that both were especially designed for steam heating couplings.

We give herewith* an illustration of still another form of de-

fective hose. This hose, like that illustrated last month is of the very best in the market, and is used in large quantities by roads very careful in their selection. It is said to be made of the purest gum, and is the most expensive hose on the market. Although it does not apparently fail in service, it is evident that it has a very serious defect—that of swelling inwardly. It will be seen that while the hose illustrated last month swelled inwardly and then sponged out, this swelled inwardly only.

Every-day Work in the Factory.

BY NICK R. AUGER.*

AN inquiry comes in from an old rubber man and one who has had a varied experience, which reads as follows:

"What is the reason that my unvulcanized stock shrinks so after calendering? I use the utmost care in compounding and in sheeting. When it is taken off of the spreading apron I am sure that it is not stretched out of shape, yet many times pieces cut out of the stock by pattern will in the course of a few minutes so draw out of shape that they are useless except for scrap. Does any one else have this trouble? Is it because I use green rubber? What remedy do you know for this?"

*From *The Railway Master Mechanic* for June.

At the time when this inquiry was fresh in my mind and as yet unanswered I ran up against a young superintendent who has a faculty for getting at the bottom of things, and I asked him his ideas on the subject.

"In the mill that I was brought up in," he said, "we had that same trouble, and it was so marked that we used to take almost all of our stocks and spreading them over steam tables allow them to crawl as much as they wished. When by this method they were sufficiently shrunken the pieces were cooled and then passed on to the cutters. If at any time this process was shortened there was trouble. After a time this got to be the usual thing and we became so accustomed to it that it did not occur to us that there might be a shorter and better way. When, however, I went into another mill I was placed where I had to do a deal of thinking for myself and this shrinking problem arrested my attention. I had a splendid calender and a first-class calender man; so I began to experiment. At first I learned nothing, for in the rubber business, no matter how well furnished a man is, he is bound, in a new line of experiments, to make all of the mistakes possible. Finally I began to spread stock that staid where I put it. As I had a wide variety of compounds I saw that this could not come altogether from the "loading." A little later when running some stock that showed a cold edge this explanation struck me. Every different rubber compound, except of course those that are so heavily compounded as to be hoplessly inert, have a certain temper. In other words in order to successfully spread them the warmer and the calender must strike a certain temperature. One can spread at other heats but not get the best results. Now on all my compound slips I have markings of my own that tell me what heat I want."

"Do you use a thermometer?"

"No, there is no way that I know of by which one can use a thermometer on a calender. I use the palm of my hand, and have a scale of mental comparisons that help me decide when I am right."

"Isn't that thumb work?" I ventured.

"Yes it is," he frankly answered, "but I get along very well. If I knew of a more accurate way I should at once adopt it, but I don't. I have managed to stop my stock from shrinking by knowing just what sort of warming and calendering it requires. Some of this I can teach to my men and some of it I cannot. Other things I hesitate about telling to them because they are in a measure my stock in trade. I get pretty good pay and it is because I am always studying out these things; and while I am willing to tell the boss of any of my discoveries, I don't as a rule tell all I know to the rest of the fellows."

FETICH RUBBER CUPS.—Eugene Wolf, who accompanied Wissmann on his latest expedition to the Kilimandjaro, states in a Berlin daily paper that the people of the pigmy Aruscha tribe cannot be prevailed upon to touch a rubber cup, as on account of its elasticity they look upon it as a fetich. According to this to export a cargo of rubber cups to East Africa would probably not prove a very profitable undertaking.

Baron Gondoriz in New York.

JOAO C. GONÇALVES VIANNA, Baron de Gondoriz, of Pará, Brazil, arrived in New York City, May 22, accompanied by the Baroness and a lady friend, and took apartments at the Victoria. The Baron needs no introduction to our readers, to whom he is well-known as owning, in his relations with a mammoth stock company three-quarters of the Pará rubber outside of the forests.

In an interview with him the Baron said he visited New York at the present time on business, and only incidentally for pleasure, and his future movements were uncertain, although he thought he might visit Boston and later take a trip to Europe.

"This is my fifth trip to New York, in fact, I come here oftener than I go anywhere else, which may seem strange. I never have visited Manaos, which is up the Amazon, and have only been to Rio de Janeiro once. The reason is that I have no business there."

"Will you establish, as has been intimated, a large house here to look out for your interests in the rubber business?"

"That subject has been considered," said the Baron, "but our plans are not far enough matured to reach a decision. I have only been in the city a few days and this and other subjects have not been so fully canvassed as to state definitely what would be the best policy to pursue.

"The best policy at the present moment would seem to be work in unison with the manufacturers, and to place, if possible, crude rubber in a position where it will not be liable to the wide fluctuations which are now liable at any time. These wide fluctuations place the manufacture in the hands of comparatively few people both in this country and in Europe, requiring enormous capital as an insurance against the sudden ups and downs in the market. Smaller manufacturers are more at the mercy of the market as they cannot always take advantage of low prices and provide themselves with stocks sufficient to tide over high quotations. If the price could be kept uniform, or nearly so, and the product uninfluenced by speculation, it would be better for every one from the forest to the customer, and if there is any way to bring about such an order of things it would be of great benefit.

"So far as the present price is concerned I do not consider it high. The system of gathering rubber and bringing it down the Amazon is a costly one, and full of hardship to the gatherer and financial risk to the Pará house. I do not see how the present system of gathering can be improved; certainly any method in vogue in temperate climes would not apply to our equatorial region. Our labor is fluctuating, mostly coming from the rubber sections like Ceará, whence as they have lately had dull times in that section we receive an influx of laborers who come and go. We can depend very little on European immigration, and of American immigration there is little or none. While the population up the river is to a certain extent growing, it is a country that requires for the new comer great care during the period of acclimatization and growth and the number of laborers is not likely to increase the supply materially.

"There is one factor in the India rubber business that leads me to believe that the present price is not a high one. For the past two or three years the winters have been moderate and yet the consumption has kept pace with the demand. Should one very severe winter come or a succession of them, the demand at prices like the present would outstrip the supply. There are, of course, growing uses for rubber all the time irrespective of those affected by the weather. All in all one cannot reasonably expect low prices in the future for rubber.

"The two companies which I represent are the Empresa Industrial de Gram of Pará and the Rio Mercantil which are well equipped with means and resources, having jointly a capital of $20,000,000; and we now hold over 3000 tons of rubber, or three-quarters of the visible supply of the world. From this time on our receipts will be small, about the same as last year.

"The new crop will not commence to come in until August and thereafter; so we will not have a great burden to carry during the next three or four months, and the situation beyond that is too far off to talk about intelligently.

"Broadly there is little for me to say at present. I am here with plans but I have not got settled and I cannot talk decidedly until I become more familiar with details and the situation as it appears here.

"Outside of rubber matters I have little information to give you. The government in Brazil is gaining the confidence of the people and is getting stronger all the time. Finances are getting into better condition and I do not hesitate to express the opinion that we are on substantial and rising ground. I cannot say much about reciprocity with the United States. So far as the trade with the Amazon is concerned no substantial progress has been made. All our ties are with Europe, all our banking facilities are with them, and the disposition is by no means a pronounced one to change our relations in that direction.

"Of course it is impossible to state the outcome, everything naturally moves slow under the Equator, and there is really nothing to say on the subject.

"We will have telegraphic communication between Pará and Manaos in about two years; but I do not agree with the statement made that the former city will lose her prestige in the rubber trade. I do not believe a reversal of the rank of two cities is possible within twenty years, and I look upon it as wholly improbable.

"I have stated that there can be no change in the methods of gathering rubber on account of inherent difficulties peculiar to that climate. We need no railways in that region, the Amazon furnishing every facility for an abundant transportation for decades. Any new cities would naturally locate on its banks, but the room for growth in that direction alone is a broad one when you consider that in all these years Pará and Manaos are practically the only places of any importance on a waterway that numbers its miles by thousands.

"The Amazon as a business artery is, however, growing in importance all the time. Steamship lines are plenty and necessary, and the craft on the river are numerous. Trade

will, perhaps, gradually increase in this way. So far as the disposal of foreign wares up the river by our companies is concerned we do not have much to do with barter. We pay cash for our receipts.

"Speaking of cultivation of rubber, it is impracticable in that country, as I have intimated. There is enough rubber; it is the difficulty in getting it, the unhealthiness of the climate and the problem of labor which makes the subject so debatable a one. To illustrate this it is only necessary to say that we are not opening up any new territory, the same lines being followed year after year; there is no necessity to explore new fields. It would do no good to extend the area of rubber gathering."

The Baron, whose biography was published in a recent number of THE INDIA RUBBER WORLD is a very pleasant spoken gentleman, as busy as a bee, and goes to the bottom of a subject in so pronounced a way as to leave no hesitation on the part of the listener as to what is meant. The statements made in the interview were in reply to questions and were given without evasion, and with apparent frankness.

Old Time New York Rubber Trade.

ONE of the pioneers in the rubber business of New York City is Theodore E. Studley, now connected with the Goodyear Rubber Co. In a reminiscent frame of mind Mr. Studley remarked one day last week: "We all used to be clustered below Fulton Street, the company with which I was, the New Brunswick, being at Liberty Street. This was in 1856. The India Rubber Glove Co. had a store in John Street with the Union Co. near by, and with the Hodgman Co. at the corner of Maiden Lane and Nassau Street. The New York was in the cluster. The New York Belting and Packing Co. were in Dey Street, and they made the first departure—going above Fulton Street to Park Row. Our principal lines were boots, shoes, clothing, and a few druggists' sundries. The last-named was exclusively in soft rubber goods which had been on the market about fifteen years, but the line was very limited. Goodyear held his patents in those days, so a good deal of the rubber for clothing was sun cured.

"The New York people made dolls and toys. In a few years afterward all these companies began to gravitate up-town.

"The New Brunswick Co. relinquished all their business except boots and shoes about 1857, being succeeded by H. G. Norton & Co. in the other lines. Hard rubber goods came into the field about 1854.

"A little preceding this time, when I was a boy, we used to get our rubber shoes direct from the country contiguous to the forests, the natives taking a piece of clay and coagulating the milk around it, forming a rude shoe with little shape to it. The clay was broken out and the shoe filled with rice hulls and then tied up and sent to us. I used to take my half-Saturday holiday and undo these shoes, scrape out the rice, turn them inside out and clean them thoroughly. They were then varnished and kept on lasts. I got a cent a pair for doing this work and thought it was praiseworthy when I made ten cents in an afternoon. In those days a little money went a good way. The rubber man in the forest was quite an expert at his business and he would take a corrugated wheel and ornament the vamp with tiny prickings, sometimes doing this in great profusion and with considerable taste. In those days we got small parcels of rubber direct from the fields on consignment, the South or Central American merchant seeing our name on goods, and venturing the shipment.

"About 1863 the business began to take on strength and it has ever since been a busy one without any material reaction in its upward progress. New ideas have come to the front all the time with new uses for goods, and the march has been a steady one. What impresses me most in going back and reviewing the whole subject is that the price for crude rubber has advanced very much indeed since then, yet our manufacturers have been inventive enough to improve on their methods of those days so well as to give us a better article at a less cost in many cases. This has been the progress that our manufacturers have made, making fairly two blades of grass grow where one did before.

Newspaper Romancing.

AN item that is travelling up and down the Pacific Coast, and which causes many to rejoice at the prospect of buying a substitute for rubber goods for next to nothing, reads:

"The India rubber market is in danger of being seriously affected by the introduction of a water-proof liquid for coating leather, in addition to several other articles, said to be impervious to heat and cold as well as to water. Possessing such properties, it will likely command a ready market, as persons will gladly lay aside the cumbersome rubber overshoes for anything promising to 'fill the bill' with more comfort. The preparation in this respect will be doubly satisfactory, if it proves as represented, as the feet will be protected from dampness and cold in winter and from heat in summer. While such a liquid would prove a great boon for the one use above stated, there are many other ways in which it could be made to do excellent and very valuable service."

A water-proof varnish of the kind here described would be found, if "impervious to heat and cold," a mighty uncomfortable foot covering. A rubber shoe admits of a certain amount of ventilation, but on warm days it "burns" the foot dreadfully and is at once discarded. Suppose this rubber were thin and were cemented to the boot, how it would "fill the bill"!

Now that we are started on the theme of newspaper wisdom about rubber matters, it may be well to say a word about a little item that has set people questioning until life is a burden to some rubber men. One item is as follows:

"Floors of rubber claimed to be as durable as asphalt, and cheaper, are being tried in Germany."

When it comes to a pass that floors can be made of rubber cheaper than asphalt the whole wide world will know it and be sure of it in a day. Streets will be paved with it by the mile instead of here and there a little experimental patch, and rubber factories will spring up so fast that every town in the country will have one. In other words in the nature of things that time can never come.

MESSRS. HENRY WERNER & CO., of Detroit, manufacturers and wholesale dealers in India rubber goods, well known in that city and elsewhere, have removed from their former place of business at 121 Jefferson Avenue, to 311 Gratiot Avenue. This firm has the agency for the Meyer Rubber Co., and the N. J. Rubber Shoe Co.'s foot-wear. It also has the exclusive agency for Bailey's rubber brushes, "Wolverine" brand oiled clothing and "Champion" patent carriage aprons.

Some Points on Steam Vulcanization.

THE New York *Tribune* publishes the following article from Mr. A. Randolph, of the Stoughton Rubber Co., and it would be well if all newspaper men would read it and ponder over it :

The article under "Home and Society," referring to rubber goods, is so misleading as to prompt me to take the liberty of correcting some of the statements it contains. The claim that all rubber except the hard, vulcanized kind, used in the manufacture of jewelry years ago, becomes disintegrated or spoiled by age, a defect which cannot be prevented because of the fact that rubber is a vegetable matter and no process has yet been discovered to overcome this, is a mistake. The process of "steam vulcanization" of rubber goods, such as water-proofs, mackintoshes, etc., was adopted several years ago and is being used by several manufacturers in this country. This process absolutely overcomes the trouble complained of in your article, giving all goods manufactured under it a durability unknown heretofore. "Steam vulcanization" means curing rubber by steam heat ranging from 240 to 260 degrees, at which temperature the sulphur mixed into the rubber melts and assimilates. This process of curing produces a rubber fabric absolutely not affected by any change in temperature, stopping all disintegration or spoiling by age. All kinds of rubber goods excepting gossamers, water-proofs and mackintoshes, are, and always have been, made under this process, which was the invention of Charles Goodyear. In the manufacture of gossamers, water-proofs and mackintoshes the process of curing by the heat of the sun and by vaporized acids was substituted simply because it is much less expensive. Competition and hence a desire to cheapen the cost of production naturally tempted manufacturers to use these processes, and a large majority of rubber garments are still being made in this way; but the "steam vulcanized" rubber garment is readily obtainable of first-class establishments. In order to obtain a durable and perfectly satisfactory water-proof garment, the purchaser needs only to see to it that the garment is steam vulcanized in its entirety after the garment has been made and not only that the material of which the garment is made has been so cured. In a rubber garment steam vulcanized after it has been made, the rubber cement used in joining the seams as well as the rubber cement used in attaching the strappings which cover the seams on the inside of a mackintosh will thus have been steam vulcanized—which is not the case when the cloth simply has been so cured, prior to making the same into a garment.

Steam vulcanization, in addition to giving the rubber water-proof durability, also makes the garment absolutely odorless and enhances the value of its water-proof qualities. European manufacturers of rubber water-proof garments confine themselves almost exclusively to the acid process, and hence their products do not compare in point of quality to the products of manufacturers in this country, who confine themselves exclusively to the process of steam vulcanization; although in justice to the English manufacturers, I am compelled to admit that one or two have very recently adopted this process of steam vulcanization, or rather claim to have adopted it, being forced to this by the superiority of the goods produced by American manufacturers. Rubber shoes are entirely cured by steam vulcanization, and the only reason that this class of goods proves so often unsatisfactory to the purchaser is because the article is of a low grade, containing but little rubber, the material used being largely "rubber shoddy," made from cast-off rubber boots and shoes. A first quality rubber shoe made by a reputable manufacturer will give uniform satisfaction to the purchaser and not become spoiled by age.

"Balloon Tires" for Bicycles.

THE great problem which wheelmen are trying to solve this season is, what style of tire is best. The introduction of pneumatic tires, their evident superiority in racing and in long road runs, has set the whole bicycle world agog. Every wheelman with a solid tire looks with a longing eye on the balloons that pass him by and sighs for the day when he may be able to exchange for one of the latter. But everything is not gold that glitters, and pneumatic tires have failings. Bicycle dealers admit that it is possible for a nail to puncture the tire, allowing the air confined within to escape, and thus to render the wheel useless until the tire has been repaired. A disaster of this character in some parts of the country would be embarrassing and perhaps annoying if ten or fifteen miles away from a railway station.

The cushion tire is not liable to such an accident, but there is a weakness that both cushion and pneumatic alike share. On account of the large tires resting on such a small rim, a sudden turn is liable to loosen the cement fastenings from the rim and roll the tires off the wheel. The quality of the cushion tire is another thing that is hard to strike just right. If too hard it is too heavy, and if too soft it becomes flabby and useless in a short time, and the happy medium is a rarity.

The pneumatic has shown enough superiority to be penalized at races, and this is what a dispatch has to say on handicapping the new machines. Good authorities on matters pertaining to cycling declare that unless the L. A. W. Racing Board makes haste to recognize officially the existence of pneumatic tired machines and to formulate rules for handicapping the riders who use them, there will be lots of confusion before the racing season of 1891 draws to a close. Mr. F. P. Prial, official handicapper for the second district, said yesterday: "Keeping precedent in view it is not exactly right that an improvement should be handicapped. When ball bearings began to supersede cone bearings no distinction was made between them, and when some riders began to use light, spider-like racing machines instead of heavy roadsters, no notice was taken of the fact. Pneumatic tires, however, cannot be introduced so rapidly or put so promptly within the reach of all American wheelmen as ball bearings were.

"I would like to suggest," continued Mr. Prial, "that in safety races the pneumatic tire be considered the standard, and that race meet committees give three classes of safety events—pneumatic, mixed, and solid tired. In the mixed events the handicapper should have the right to penalize pneumatic tires according to the size and condition of the track."

A PORTABLE boat has been devised by Colonel Apostoloff, of the Russian army, which may be constructed instantly by making a framework with the lances of the Cossacks and covering with a rubber cloth. Two boats are capable of carrying thirty-six men with their baggage and arms.

A MOST singular relic was exhibited at a meeting at Calcutta of the Asiatic Society at Bengal, consisting of a piece of cable, the rubber covering of which has been pierced by a blade of grass. The piercing was so complete, and the contact with the copper core so perfect, that the efficiency of the cable was destroyed.

Current Gleanings.

BY LIGHTNING ARRESTER.

THE new submarine cable factory at Calais, built by the Société Générale des Téléphones, was inaugurated a short time ago with great ceremony, a large party of French electrical engineers and journalists having gone from Paris to inspect the works and wish success to the expedition which sailed for the West Indies with the first cable turned out by the factory. The French journals are jubilant at the fact of a cable ship being dispatched from a French port to lay submarine cable manufactured in a French factory. The *Figaro* says that during the past thirty years, France has paid not less than ten million dollars for cables made in England, and the press generally rejoices at the fact that in future all the cables that French telegraph companies or the French government are likely to need can be made in France.

* * *

It is somewhat curious to note that in spite of the eminence attained by American manufacturers in all other lines of electrical work, no attempt has yet been made to establish the manufacture of submarine cables in this country on anything but a comparatively small scale. It is true that several of the more prominent firms of insulated wire makers turn out short lengths of submarine cable for harbor and river crossings, but that is a very different thing to the manufacture and laying of long ocean cables. In the current number of the *Engineering Magazine* it is pointed out, in an article on "Commercial Opportunities in Hawaii," that the Hawaiian Islands stand very much in need of cable communication with the United States, and a job of this sort would be a very good one for an American cable factory to start off with.

* * *

The high price of rubber is always a sore point with the electrical man, and that there was any prospect of a new source of supply being opened up would be joyful news to him. Apparently there is such a prospect, although the accounts so far are a trifle too vague to afford ground for very much rejoicing. In a paper recently published in the *Transactions of the Pharmaceutical Society* a description is given of a new India rubber tree which is believed to be a native of China. The Chinese use a bark called *Tu-chung*, which is highly valued by them as a medicinal agent. Among a collection of Chinese drugs made by an English physician was a specimen of this bark, which attracted so much attention that other samples were procured from Hong Kong for close examination. When broken transversely the bark exhibits a series of white shining silky fibres, which are very extensible; these are not spiral vessels for the microscope showed no trace of these organs in the threads. On being placed in a flame a piece flared up and gave off the odor of burning rubber. Professor Oliver, the well-known authority of the Kew Botanical Gardens, has examined this bark, and while unable to decide on the systematic position of the tree from which it is derived, is very decided in his opinion on one point, which is the one of importance to electricians, namely, that a quantity of caoutchouc is present in the bark and in all the younger tissues, excepting the wood, properly so-called. This tree ought to prove valuable as a source of India rubber.

* * *

In a lecture on "Electric and Magnetic Screening," recently delivered at the Royal Institution, Sir Wm. Thomson condemned the "single wire" system of wiring ships for the electric light, on the ground that observation has shown it to produce an error in the ship's compass of from 3 to 7 degrees, every care being taken. Sir William declares that the argument that the iron hull protects or screens the compass from the deflecting influence of the current is fallacious. He recommends the double wire system for electric light installations on board-ship. The best method of carrying out the two conductor system is to use concentric wiring, and a very complete system of concentric wiring has been worked out by Mr. J. D. F. Andrews, of London, whose firm has made many successful installations both on board-ship and on shore, using concentric conductors throughout. No neater or safer method of wiring, either for ships or buildings, than this can possibly be imagined.

* * *

There was an interesting little discussion last month in some of the foreign technical papers on the life of submarine cables. The *Mechanical World* stated that "a submarine telegraph cable has a life of ten or twelve years; if a cable breaks in deep water after it is ten years old, it cannot be lifted for repairs, as it will break of its own weight." Such a statement is obviously absurd and entirely erroneous, and the London *Electrical Review* came to the rescue by pointing out that "there are now in existence and in working order, about 44,000 nautical miles of cables, having a life of fifteen years and over; of this length nearly one-half, or 21,000 knots are twenty years old, and over. There are several cables now working which are more than twenty-five years old, but these are principally of short length and lying in shallow water." Taking into consideration the improvements in manufacture that have been introduced during the last twenty years, it would be pretty safe to take the average life of submarine cables laid down at the present time as being at least thirty years, and probably considerably more than that.

* * *

In many States the Boards of Underwriters have condemned the use in electric light installations of any lamp cord that is not fire-proof. Twin conductor cord for suspending incandescent lamps is greatly in demand, and the Central Electric Company, of Chicago, have lately brought out a new style of incandescent lamp cord with absolutely fire-proof covering. They have already had large sales of this cord, and predict that before long it will drive all inferior articles out of the market.

* * *

Greatly to the regret of all New York electrical men, the Board of Electrical Control has had the term of its existence lengthened by another year, and a new commissioner has been appointed to fill the vacancy caused by the death of Mr. Daniel Gibbens. At a recent meeting the Board authorized the division between two companies of the work of constructing and maintaining subways. The old company (the Consolidated) is to build subways for high tension wires, while the new Empire City Subway Company is to take care of telephone, telegraph, and other low tension wires. As the high tension people resolutely refuse to pay the subway company a cent of what they owe them for the use of ducts, it seems that the new company has rather the best of the bargain. Moreover at a still more recent meeting of the Board, the mayor flew into one of his accustomed tantrums, and caused his dummy commissioners to pass a resolution declaring the bond of the subway company forfeited because some of the work had not been finished by June 1. If the mayor should really succeed in confiscating the $250,000 bond of the subway company, what rejoicing there would be in Tammany Hall over such a piece of booty. It is said, too, that the mayor is not content with the bond alone but he wants the subways as well. The directors of the subway company must be pretty well disgusted with the whole business, but they will make a pretty strong fight against Mayor Grant's scheme of plunder all the same.

The H. & M. Standard Thermometer.

IN boiling linseed oil at temperatures ranging between 550 and 610 degrees F., a good reliable thermometer is as essential to safety as a steam gauge to a boiler is. The H. & M. Standard Mercury Bath Thermometer, manufactured by the Hohmann & Maurer Co., Brooklyn, N. Y., is shown in the accompanying cut, and is claimed to surpass every other temperature indicator ever placed on the market for the boiling of oils or for varnish and composition making. It operates perfectly to 650° without mercury separating or jumping. With ordinary care it will give accurate results for many years. Being substantially constructed and protected, it does not require delicate handling. Its construction is such that the glass tube and bulb never come in contact with the substance into which the thermometer is immersed. The frame is screwed together and the joints are oil tight. The figures are very large and the graduations heavy, and can be easily read. The scales are protected by a heavy glass plate cemented in the casting, which keeps them bright and clean. As nothing enters the inside of this thermometer, it can be quickly cleaned by wiping and used for oil and varnish. It will resist sudden changes of temperature, and can be suddenly immersed into hot liquids as high as 600° without the least danger of breakage. For tinning wire for insulation this thermometer will be found very serviceable for regulating the temperature of the tin bath to avoid its forming dross. It will also be found useful in making tests of the chimneys and boiler flues. This thermometer has proven to be a practical success wherever used for the aforementioned purposes, but to be able to appreciate its merits it must be tried. The manufacturers send these instruments on thirty days' trial to any responsible house. They also send, on application, a descriptive circular giving testimonials from rubber manufacturers and others using this thermometer.

BY-PRODUCTS in many chemical industries often have considerable commercial value without that fact having been discovered. The residue which remains after refining tar with sulphuric acid has heretofore been regarded as worthless (*Gummi Zeitung*). This mass is now worked up into a black substance resembling asphalt closely but with elastic properties resembling poor rubber. When this is submitted to a continued and intense heat the volume decreases about 60 per cent. and the substance becomes hard like ebonite and very elastic. In its hard form the substance is known by various names according to the use to which it is applied, while the soft form is known as "mineral rubber asphalt." It is a good non-conductor and is therefore available for insulating. When dissolved in naphtha the "rubber asphalt" forms a very durable waterproof varnish.

Interesting Depositions in the Old Hayward Suit.

THE editor of THE INDIA RUBBER WORLD has many times been asked if he knew where the printed reports of the famous Hayward Patent Extension case could be found. Until quite recently he was obliged to reply in the negative. A friend in Providence, however, sends us three pamphlets that contain a deal that is of interest in the case, and as the documents are old and fragile, it is deemed wise to republish parts of them, thus loaning them by proxy.

DEPOSITION OF SAMUEL F. UPTON, of Boston, in the County of Suffolk, and Commonwealth of Massachusetts, a witness on the part of the Memorialists to the House of Representatives, against the passage of an Act extending the Patent, granted to Nathaniel Hayward, dated the 24th day of February, A. D. 1839, for a new and useful improvement in the mode of preparing caoutchouc with sulphur for the manufacture of various articles, etc.:

Interrogatories propounded by A. Payne, Esq.

1. Question. What is your age, residence and present occupation?

Answer. Thirty-five years old, reside in Chelsea. Am lumber dealer.

2. Q.—Have you ever been concerned in the manufacture of India Rubber, if so, where, for how long a time, and in connection with whom, if any one?

A.—I was engaged in the manufacture of India Rubber in 1845, in Beverly, with Mr. Stanley, Mr. Larrabee and some others, Mr. Nelson, also, Mr. Stimpson, Mr. S. S. Stanley and Mr. Wallace. And in Malden, as Superintendent of the Edgeworth Rubber Co., and the Malden Manufacturing Co. I left the Malden Manufacturing Co., or rather was discharged from that company in 1855. The stockholders of the Edgeworth Rubber Co., were Mr. Davis, Mr. Farley, Gardner Greene Hubbard, and Horace H. Day. Those were the principal stockholders. The Malden Manufacturing Co., Nathaniel Hayward, Hayward Rubber Co., Leverett Candee, Candee Rubber Co., Thomas C. Wales, Naugatuck Rubber Co., New Brunswick Rubber Co., the Ford Rubber Co., Gardner Greene Hubbard, Elisha S. Converse. Those were the principal stockholders. Professor Horsford was also a stockholder, and the Newark Rubber Co.

3. Q.—Under what Patents, if any, have the different parties you have mentioned manufactured rubber since 1848?

A.—The Malden Manufacturing Co. worked under the Goodyear Patent, so-called.

4. Q.—Do you include in the Goodyear Patent, the Sulphur Patent, so-called, sometimes called the Hayward Patent?

A.—I wish to correct my last answer and add—the Chaffee Patent. We used the Sulphur Patent. We vulcanized with sulphur.

5. Q.—State whether you are acquainted with Nathaniel Hayward, and how long you have known him?

A.—I am. I have known him several years.

6. Q.—State how many years?

A.—I cannot, definitely.

7. Q.—More or less than ten?

A.—Less.

8. Q.—More or less than five?

A.—More.

9. Q.—What, during the time you have known him, has been his occupation?

A.—Manufacturer of India Rubber Shoes.

10. Q.—Can the Sulphur or Hayward Patent, so called, be used to advantage in the manufacture of India Rubber, without the vulcanizing, or Goodyear Patent, so called?

A.—I know of no way that it can.

11. Q.—State whether or not, the manufacture of India Rubber under the Patents you have mentioned, and by the parties you have named, has been a profitable business?

A.—No sir, it has not.

(Mr. Payne requests that the question be read to the witness again. Question read accordingly.) Witness says he does not wish to retract his answer. The parties I was connected with —those I was individually associated with, I mean.

12. Q.—Why not?

A.—Owing to a want of skill in the management of the factories and those concerned not having their own way in manufacturing.

13. Q.—Why didn't they have their own way?

A.—Some of the directors wanted their own particular style of manufacture, and others theirs, and Prof. Hosford of Cambridge, experimenting too, so that no one plan could be matured.

14. Q.—Were you ever directed by any party to use poor materials in the manufacture at that establishment, and if so, by whom?

A.—No sir.

15. Q.—Has the manufacture of India Rubber by the Hayward Rubber Co. and the other parties using said Patents, except the Malden Co., been profitable?

(Question objected to.)

A.—I believe it has.

16. Q.—State when the Malden Co. was formed; state why it was formed so far as you know, and state particularly what means were taken to induce the Shoe Associates, so called, to grant a license to the Malden Co., and what reasons induced them to grant such license?

A.—The first intimation that I had, the Shoe Associates sued the Edgeworth Rubber Co. for an alleged infringement of their Patent, which drove them into insolvency. Mr. Gardner Green Hubbard, of Cambridge, and Prof. Hosford, stated that they had discovered certain information that would destroy the existing Patents of Goodyear and his associates, and in order to suppress that information, the Malden Co. was formed. They putting a license in at a hundred thousand dollars towards the capital, they owning one half of the capital stock, the other parties that I have previously named with William Judson, of New York, the other half.

17. Q.—State the materials used in the manufacture of India Rubber Shoes and the proportion of those materials to the rubber used in that manufacture?

A.—I do not remember, it is so long since I worked in them, having left my minutes at home.

18. Q.—Can you state generally whether other materials than rubber are used, and if so, state what materials, and as nearly as you can from recollection their proportion to the amount of rubber used?

A.—We always used sulphur and lamp-black—sometimes plaster, plaster of Paris, pipe-clay, litharge and white lead. About one-third rubber.

19. Q.—Is there any difficulty in vulcanizing the composition so made up of one third rubber, and the other materials you have mentioned?

A.—No sir.

20. Q.—In the present state of the art, can rubber be manufactured to advantage without the use of the Sulphur or Hayward Patent?

A.—It cannot to my knowledge.

Cross interrogatories propounded by J. S. Pitman, Esq.

1. Q.—How do you know that the manufacture of Rubber by the Hayward Rubber Co. and others has been profitable?

A.—When first I heard of Mr. Hayward in connection with S. B. Pearce of Salem, on Washington Street, through Mr. Henry Burr purchasing rubber of importers in Salem, their note at that time for the small sum of six hundred dollars, was renewed in part for non payment; having a small factory at Lisbon, now having the largest one in the United States, leads me to believe they have made money in the business.

Said rubber was purchased of Edward Putnam of Salem, for which the note was renewed. The other factories beginning with small means, and being now very largely engaged in the business in large factories making on the average fifteen hundred pairs of shoes per day. The profits on these shoes vary in the gross from fifteen to twenty-five cents a pair.

2. Q.—Whom do you mean has the largest factory in the United States? Mr. Hayward or the Hayward Rubber Co. as stated in your last answer?

A.—The Hayward Rubber Co.

3. Q.—Did not the Malden Co. under their license pay three and a half cents per pair for the shoes they manufactured and so far as you know, is not this the same amount which Doct. Hartshorn and others paid under their licenses?

A.—I do not know that the Malden Manufacturing Co. ever paid one cent

4. Q.—Did you ever read the license that Company received?

A.—I think I have.

5. Q.—What amount did they agree to pay per pair for the shoes manufactured by them?

A.—Three cents and a half.

(Mr. Payne objects to any testimony about the contents of any paper.)

6. Q.—What amount was paid by other licensees per pair for the shoes manufactured by them, or agreed to be paid?

A.—I do not know.

7. Q.—Was the Edgeworth Rubber Co., of which you were Superintendent, using the Goodyear Patent, or process, so called, of vulcanization?

A.—No sir.

8. Q.—How did they vulcanize shoes manufactured by them?

A.—By heat.

9. Q.—Did they use sulphur with the rubber?

A.—They did.

10. Q.—Had the Edgeworth Rubber Co. any license from Charles Goodyear, or from any person having control over his patents?

A.—They had not.

11. Q.—Who is the counsel present proposing questions on the direct examination?

A.—I couldn't tell the name. I was introduced to him a few moments ago, but have forgotten his name. His name is Abraham Payne.

12. Q.—Who introduced him to you?

A.—George O. Bourn.

13. Q.—Are George O. Bourn and Isaac Hartshorn present at this your examination, consulting and advising with Abraham Payne, Esq.

A.—They are present.

The Witness adds to the answer to the second direct interrogatory,—I followed no other business between 1845 and 1855.

(Signed) SAMUEL F. UPTON.

DEPOSITION OF GEORGE O. BOURN, of the city and county of Providence, in the State of Rhode Island.

Direct interrogatories propounded by A. Payne, Esq.

1. Question.—What is your age, residence and occupation?

Answer.—My age is forty-seven years. I have been engaged in the rubber business more or less ever since 1840. I reside in Providence. Have resided here about thirty-one years.

2. Q.—In what branch of the rubber business have you been engaged?

A.—In 1840, I was in company with David L. Winslow in Green Street. We made shoes, carriage cloths, and other cloths suitable to be made up into garments of various kinds. I continued there till 1843; we were then making about two hundred and fifty or three hundred pairs of shoes per day. In the latter part of the year 1844 and up to 1850, we manufactured what was known in the market as the Providence Shoe. In the fore part of the year 1845, we commenced business in Dorrance Street, where we now are, where we made the Providence Shoe.

3. Q.—Explain the condition and history of the manufacture of rubber from the time when you commenced the rubber business up to the present time, so far as you are acquainted with it?

A.—If you mean in regard to the quality of the goods made in 1840, and up to 1850, and the component parts of rubber I can explain. We mixed lamp-black and rubber and ground it in the usual way and spread it in sheets, sometimes we would use some coloring matter to give color to the rubber. That was the only substance used to my knowledge, unless for vulcanizing purposes. Those goods were first-rate. They took the lead of any goods in the market to my knowledge.

4. Q.—Who, so far as you know, originated the Memorial against the extension of the Hayward patent and procured signatures to the same in this vicinity, and forwarded it to Washington?

A.—Bourn & Brown.

5. Q.—Was the Hayward patent or process ever used in the trade except in connection with the vulcanizing patent or process, and can it be used by itself to any advantage?

A.—It never was used to my knowledge, and never could be used effectually without combining heat.

Cross interrogatories propounded by J. S. Pitman, Esq.

1. Q.—Who compose the firm of Bourn & Brown?

A.—George O. Bourn and William W. Brown.

2. Q.—Are you now engaged in the manufacture of India rubber, individually or as a member of a firm, and if the latter, as a member of what firm or firms, and where is such business carried on?

A.—I am a member of three firms, the firm of Bourn & Brown; E. M. Chaffee & Co.; Brown, Hibbard, Bourn & Co. They all manufacture rubber shoes and other articles. The business is carried on in Providence and Montreal.

3. Q.—Are you acquainted with the process described in the specification of the patent of Nathaniel Hayward of 1839, and in that of the patents of Charles Goodyear of 1844 and 1849, and have you used such process or processes in your manufacture?

A.—Not as they describe them.

4. Q.—Have you used them or either of them substantially?

A.—We do not use them as they describe them. We use some articles which they describe, but in a different way.

5. Q.—Have you since 1840, used sulphur in combination with rubber for the goods you have manufactured?

A.—We have used sulphur in all goods we heat. We commenced heating in 1851. We never used it before that time. We never used it in any goods which were not heated.

6. Q.—Have you at any time employed an agent or agents to sell the goods manufactured by you in Philadelphia since 1851, if so, whom?

A.—Yes. Mr. Albert C. Eddy. He sold our goods in Philadelphia. He ceased to be our agent a year and a half ago, nearly.

7. Q.—Have you ever consigned goods to him for sale since he ceased to be your agent, or has he sold rubber shoes manufactured by you since that time?

A.—We have not consigned any goods to him since that time. He has not sold any goods for us in Philadelphia since that time.

8. Q.—Will you state in answer to the last question whether or not he has sold rubber shoes manufactured by you since that time?

A.—He is employed by us to sell rubber shoes or to do anything that is required for him to do in and about our business.

9. Q.—Do you mean that he is so employed in Philadelphia, or that he has been so employed there?

A.—I don't understand what you mean.

10. Q—Has Albert C. Eddy sold in Philadelphia within a year and a half last past, rubber shoes, manufactured by either of the firms of which you are a member?

A.—I have already answered that question.

11. Q.—Since you ceased consigning goods to Albert C. Eddy has he sold any goods manufactured by you?

A.—He has sold rubber goods but not in the Philadelphia market; I mean shoes.

12. Q.—Are you acquainted with the firm of Walters & Stackhouse in Philadelphia?

A.—Yes, sir.

13. Q.—Have they at any time sold goods manufactured by either of the firms of which you are a member, if so, when?

A.—Not within a year and a half. I might more properly say not within a year. I can't recollect dates previous to that time.

14. Q.—Were suits commenced against Albert C. Eddy and Walters & Stackhouse by Charles Goodyear, or Leverett, Candee & Co., the Hayward Rubber Co., and other parties, or either of them, for infringements of the patents of Charles Goodyear of 1844 and 1849, and of Nathaniel Hayward of 1839, to which suits you was a party defendant?

A.—There were suits brought against Albert C. Eddy and Walters & Stackhouse, I believe by Hayward and others, I should say Goodyear, but not for the Hayward patent, for that was not in existence. No suits were brought against us, we were not a party to any such suits.

15. Q.—For the infringement of what patents were those suits brought?

A.—The Goodyear Patent, I think, according to the best information I can get. The heating process.

16. Q.—Were you and William W. Brown and Edwin M. Chaffee named as parties defendant in either of those suits?

A.—We might have been, I can't tell. If they see fit to put in our names all over the country they do so, but we were no parties to those suits. They have a set of men whose business it is to go round and sue every one that they have an idea that makes any kind of boots or shoes of rubber of any description.

17. Q.—Did you make an affidavit to be used in either of those cases?

A.—I might and I might not. I don't recollect now.

18. Q.—At the time the suit was brought against Albert C. Eddy, was he your agent for selling shoes?

A.—I have already stated that fact that he was. He was selling our shoes.

19. Q.—Did not the Circuit Court of the United States before which that suit was pending, issue a decree of injunction against Eddy and others?

A.—They might. You can tell by the records. I don't know. I never saw them.

20. Q.—Is there or not a suit pending in the Circuit Court of the United States for this district in which L. Candee & Co., The Hayward Rubber Co., and others, are plaintiffs, and George O. Bourn, William W. Brown and E. M. Chaffee are defendants; if yea, are you the person there named George O. Bourn, and is William W. Brown named in that suit, a member of the firm of Bourn & Brown named in your answer to the 4th direct question?

A.—Yes, sir. We are, and we had proposals last week, within ten days, that they would withdraw that suit and all other vexatious suits that they have commenced against us, give us a full right in the Goodyear license, all the rights the licenses or the original owners now hold, and a right to use the so-called Hayward patent, if we would not oppose the Hayward patent in Congress.

21. Q.—Were you a party to a suit in the Circuit Court of the United States for this district in which Isaac Hartshorn was plaintiff for infringement of a patent right granted to Charles Goodyear, which said Hartshorn claimed. If so, when was that suit commenced and ended?

A.—Some six or seven years ago. It is a matter of record. I don't recollect.

22. Q.—Was that suit brought to recover damages for the infringement of the patent referred to in the 21st cross question?

A.—I don't recollect. It is an old affair. It has passed from me years ago.

23. Q.—Was judgment rendered against you in that case?

A.—No, sir. It was compromised.

24. Q.—Was the verdict of the jury against you?

A.—I think they were. I am not positive. It is an old affair, as I have answered above. It hasn't entered my head for the last seven years before.

(Signed) GEO. O. BOURN.

DEPOSITION OF ALBERT C. EDDY, of the city and county of Providence, in the State of Rhode Island.

Direct interrogatories propounded by A. PAYNE, Esq.

1. Question.—What is your age, residence and occupation?

Answer.—My age is thirty-two years. I am employed by E. M. Chaffee & Co. in the rubber business. Reside in Providence, at present.

2. Q.—Were you acquainted with the manufacture of rubber shoes in Providence about 1840, and subsequent to that time; if so, for how long; state what was the quality of the shoes made and how extensively the business was carried on?

A.—I knew of shoes being made here in 1841. I was employed about that time in the manufactory of them, and after that time I went to Philadelphia to live, where I was employed in the shoe business, and bought and sold India rubber shoes, known as the Providence Rubber Shoe—they were a very good shoe—the best shoe there was in the market at that time—up to 1848. I always understood the business was carried on more extensively in Providence at that time than in any other place.

3. Q.—Was the Hayward or sulphur patent or process, so-called, used in the manufacture of those shoes?

A.—It was not, to my knowledge.

4. Q.—Was any other shoe than the Providence Shoe, to your knowledge, manufactured or sold, to any extent, at that time?

A.—There was not.

(Signed) ALBERT C. EDDY.

DEPOSITION OF LEANDER M. WARE of the city and county of Providence, in the State of Rhode Island.

Interrogatories propounded by A. Payne, Esq.

1. Question.—What is your age, residence and occupation?

Answer.—My residence is Providence. My age is fifty-three. My occupation at present is accountant.

2. Q.—Were you ever engaged in the manufacture of India Rubber, if so, when, where and for how long a time?

A.—I have been so engaged from the year 1839 to 1849, at different periods within that time, not so engaged all the time; in this city of Providence.

3. Q.—Were you acquainted with the India Rubber shoe, known in the trade as the Providence Shoe, if so, please state the quality of that shoe, how extensively it was manufactured and sold, and during what time?

A.—I am acquainted with the shoe so-called. Its qualities were satisfactory to the customer and the consumer. I am not able to state the quantity manufactured, but in thousands. They were manufactured during the period named in my former answer, from 1839 to 1849.

4. Q.—Was the Hayward or sulphur patent, or process used in the manufacture of those shoes?

A.—It was not.

5. Q.—Was any other shoe manufactured from rubber during the time you have mentioned, sold or used to any extent during that period, to your knowledge?

A.—Towards the latter part of that period the sulphur, or vulcanized shoe came into use, but to no very great extent while I was engaged in that business, to my knowledge.

7. Q.—Were shoes ever manufactured and sold to any extent by the sulphur process except in connection with the vulcanizing process?

A.—I do not know.

8. Q.—Did you ever see any shoes made of sulphur and rubber and not vulcanized, in the market?

A.—I have no recollection of seeing any.

9. Q.—So far as you know, can rubber combined with sulphu be profitably used in the manufacture of any kind of articles without being vulcanized?

A.—I know of no process that it could be.

Cross interrogatories propounded by J. S. Pitman, Esq.

1. Question.—Who were the manufacturers of the Providence shoe, so-called?

Answer.—Doctor Isaac Hartshorn & Company, Warring & Ware, Bourn & Brown. (Dr. Hartshorn here says to the witness, Dr. Jackson.) I don't recollect others.

2. Q—Describe the process of making that shoe?

A.—The exterior, or rubber portion, was composed of India rubber, camphene and lamp-black, and strengthened in its different parts by linen cloth or netting. After the compound was made properly it was spread or formed into sheets of India rubber. The cloth or netting was prepared by covering it with a coating of thin India rubber. Those being ready they were laid upon the tables, the patterns laid on the sheets of rubber, and they were marked and cut out. After being in that form they were given usually to the females to make up in the form of a shoe. While that was going on, there was fine linen cord being coated with a solution of India rubber, which being properly prepared was usually taken by one of the youngest workmen

and formed into what we called a chain. That was placed and pressed upon a thin sheet of India rubber. The object in pressing it on was to hold it in its proper shape. This being cut into narrow strips of the width of the chain, they were also given to the females who were to form the different parts of the shoe. They then commenced forming the shoe, by taking the lining which was of India rubber, they placed it upon a last of the form and size which they wished the shoe to be when completed, they brought the different edges of this lining together, clipped them with shears, and cemented the edges together. They would then take strips of the grass-cloth or netting alluded to, pieces about an inch wide, and lay it around the edge or corner of the shoe, reaching about a half an inch up the sides and around the heel and toe of the shoe, and about a half an inch around the bottom of the shoe. The heel piece, so-called, was next put on to the heel, as a stiffener. A piece of the said grass-cloth cut in the shape of the sole and laid on to the sole or bottom of the shoe. These parts were rolled and hammered down together; the narrow strip of rubber with the chain upon it referred to, was placed around the top of the shoe, of its quarter, vamp and heel, and cemented to the edge which it touched. This composed the inner portion of the shoe. The outside was next placed over the whole of this work, brought round on to the bottom of the shoe, and the gores that would form were cut out, leaving edges together which were cemented by rolling and pounding them. The quarters were brought together at the heel and the heel seam made by cementing the edges together. The upper edge of the quarter vamp and heel were cut properly and turning in formed a hem, and inclosing the chain above described. The soles were then, having been properly shaped, their edges bevelled so as to fit the shape and form of the shoe, was laid upon the bottom of the shoe, forming the sole or bottom part of it, being pressed by a roll or hammer. The edges were crimped or pressed down and cemented. After which there was a small tool called a stitcher run round the edge of the sole, so as more effectually to confine its edge. Also it was run round underneath the hem around the top, so as more effectually to display the form of the hem and the chain, and each side of the heel seam. The next process performed by the female was to take it off said last, and carry it to a vessel containing magnesia, in which they immersed it, or powdered it inside and out. The object of that was to prevent them from adhering to each other, or to others, as they were in a sticky or tacky condition. The shoe was then put into the hands of the male workman, for him to put through the curing, or tanning process. (George O. Bourn inquired if that is hot liquor or cold, and the witness replies, Mr. Goodyear used to use cold, to the destruction of the object he wished to obtain, to the best belief of the witness.) The process of curing consisted in immersing the shoe in a combination of muriatic and nitric acid. The condition of the acid being, and kept as near at boiling heat as possible. Being taken out, they were sometimes put into lime water and sometimes not so put, but they were always rinsed clean as possible in one or two waters. They were afterwards placed upon racks, hung upon pegs or laid upon shelves to dry. After being so dried, he drew them upon lasts again, which brought them into good and proper shape, and if his fancy dictated he would ornament their different surfaces with imitation of stitching, and as a finishing operation would give them a thin coat of sizing, to give them a smooth and bright appearance. Then taking them from the last, placing the two that were intended for pairs together, tying them with a cotton string, and filling them with waste cotton to aid in keeping their proper shape, and placing them upon the shelves would complete the operation of making a Providence Shoe.

3. Q.—Are there any shoes of that description now manufactured?

A.—Not to my knowledge.

(Signed) LEANDER M. WARE.

Adjourned to seven o'clock, P. M.

(Signed) JEROME B. KIMBALL,
Justice of the Peace.

(*To be continued.*)

Rubber Tires and Public Health.

A PROMINENT German professor in a recent lecture said that in the future the hygiene of the nervous system will play an important part in medical science; that the influence of the conditions of modern life are highly detrimental and that the noises of the street, the rattling of wagons, etc., in large cities is particularly harmful. The question of a noiseless pavement was therefore one of great hygienic importance. In commenting on this statement the *Gummi Zeitung* points out that while noiseless pavements would alleviate the trouble the noise would by no means be abolished as the street-cars would still continue noisy. The only radical cure would seem to be through a combination of noiseless pavements and rubber-tired vehicles. At present, however, the prices of such tires would prove prohibitive, though it is possible that a composition might be invented which would combine the requisite elasticity, durability and cheapness to be available not only for the tires of wagons and street-cars but eventually for railway cars themselves.

Obituary.

ISAAC T. ROGERS died at Hartford, Conn., May 19. He was born in New Haven and spent a large portion of his seventy-nine years there. Prior to fifteen years ago he was one of the best known men in Connecticut politics. While a citizen of Milford he represented his town in the Legislature several terms and was three years in the Senate.

Mr. Rogers learned the carriage-painting trade in New Haven, but did not follow it long. In 1848 he and his twin brother, Henry, established a large business in Yankee notions and rubber goods on Broadway in New York. Later the brothers opened an English branch in London. They amassed a large fortune for those times. Many years ago Mr Rogers retired to Milford, where he built a fine residence by the sea.

CHARLES H. DALE, general sales agent of the Peerless Rubber Co., is at Cape May attending the convention of the Master Car Builders and Mechanics. He expects to be absent two weeks. Railroad men use a quantity of rubber goods, especially hose, and when the representatives of all the roads in the country come together a great deal of business can be done.

THE Atlas Rubber Co. has moved its store and factory from 68 Park Place and 10 and 12 College Place to 241 Greenwich Street, New York. It now occupies four stories, each 107 feet deep, which is quite an addition to its facilities. The company will endeavor to keep better pace with the demand for those rubber devices which do so much to palliate the ills of mankind—druggists' specialties.

Recent Rubber Patents.

No. 451,030.—Inkstand; Edward T. Darke, London, Eng. An inkstand consisting of an ink container, a vulcanized India rubber cap, fitted upon the neck of the container, and a plug movable through the cap into the container, such plug having an ink-cup formed in it, and a passage by which the ink ascends from the container into the cup when the plug is moved inward.

No. 451,179.—Valved rubber air-bulb; Walter F. Ware, Camden, N. J. A flexible air-bulb, having provided integrally with its walls a longitudinally-disposed flexible valvular projection at one end, this projection provided in its end with a slit, the lips of which are opened or closed as the integral walls of the bulb are compressed or relaxed; the flexible air-bulb and an additional air valve provided at the other end of the bulb, constructed to operate inversely to the flexible valve.

No. 451,200.—Elastic head for boots or shoes; Walter B. Manny, St. Louis, Mo. A heel for boots or shoes, having a rubber plate interposed between its layers, and a fastening device or devices rigidly securing it to the boot or shoe and the various layers, at the front part of the heel only.

No. 451,379.—Insulator; Robert D. Haines, Corning, N. Y. A process of manufacturing insulating conduits or coverings for electric conductors; which consists in forming a core of clay, drying it until it is firm and rigid, then dipping or submerging it in molten glass, or otherwise covering it with glass in a plastic state, and finally annealing the glass plated conduit in a suitable kiln.

No. 451,477.—Tire for cycles; Francis Gleason, Philadelphia, Pa. The combination with the grooved felly of a velocipede, of a tire constituting the bearing surface or tread of the wheel, the tire being made up of a series of hollow elastic sections fitting the groove, and each section being provided with a normally open hole for the passage of air under pressure of the wheel.

No. 451,561.—Crupper; Frederick H. Keikenapp, Fairibault, Minn. Combination with the crupper and the billet of the crupper strap of an elastic base plate held between the parts of the billet, and provided with a projecting hook or tongue, and the co-operating plate secured to the crupper, having an opening and a longitudinal groove or tongue for receiving the tongue of the co-operative plate.

No. 451,586.—Insulated electric conductor; James B. Williams, Oakland, Cal. The combination with the conductor and its surrounding dielectric of a centering device composed of fibrous material saturated with an insulating material not so readily softened by head as the material of the dielectric.

No. 451,587.—Insulated electric conductor; James B. Williams, Oakland, Cal. The combination with a central metallic conductor provided with a vulcanized dielectric of a centering device also surrounding the conductor and embedded in the dielectric; and composed of fibrous material saturated with an insulating material not injuriously affected by sulphur during the process of vulcanization.

No. 451,643.—Atomizer; Joseph Schoettl, Brooklyn, N. Y. The combination of a continuous outer tube and its nozzle and inner tube with a continuous inner tube having a threaded enlargement and the grooves traversing the grooves of thread.

No. 451,693.—Composition adapted for steam packing; John Johnson, Brooklyn, N. Y. A composition of rubber bone black, gutta percha, sulphur, and ozocerite, or equivalent material.

No. 451,769.—Oil well packer; Augustus W. Newell, Bradford, Pa. An oil well packer comprising a vulanized packing, combined with a cap, consisting of a ring having a base that rests upon the end of the packing, and a vertical flange of less diameter than the packing, and having transverse perforations, whereby the flange is wholly enclosed within the packing.

No. 452,001.—Rubber tire for vehicles; Nicholas Yagn, St. Petersburg, Russia. A rubber wheel tire having its inner side inclined upwardly, and its outer side substantially straight, to form a wedge shaped tread.

No. 452,234.—Self-inflating mat or cushion for sliding poles; Edward L. Perry, Paterson, N. J. A bottomless self-inflating mat, having a perforated rim, provided with elastic supports, apertures and a roughened top.

No. 452,327.—Whip; George E. Whipple, Westfield, Mass. A whip consisting of a suitable body, an outer plated covering, and a lining consisting of strips of celluloid laid longitudinally on said body and enveloping the same, interposed between the body and the outer covering.

No. 452,340.—Electric cable; William A. Conner, Pittsburgh, Pa., assignor to the Standard Underground Cable Co. As an improvement in the art of manufacturing electric cables, a method which consists in forming an open meshed fibrous covering around each wire, laying up a series of two or more of such covered wires into a core; dipping the core in a bath of insulating material of suitable fluidity, so as to drain off from the core when raised from the bath, thereby saturating the fibrous covering, without filling the interstices therein; covering the core with a lead sheet, and compressing the sheet against the core at intervals.

No. 452,341.—Electric cable; William A. Conner, Pittsburgh, Pa., assignor to the Standard Underground Cable Co. Method which consist in covering each wire with a fibrous material, covering a series of two or more wires in a core by a closely laid wrapping, so applied as to leave certain portions of the core uncovered; applying a sealing material to the core, the sealing material entering the portion of the core unprotected by the wrapping; applying a lead sheet to the core, and causing the sheet to compress portions of the core unprotected by the wrapping.

No. 452,342.—Electric cable; William A. Conner, Pittsburgh, Pa., assignor Standard Underground Cable Co. A method consisting in covering each wire with fibrous material, inclosing a series of two or more wires so covered in a core by a closely laid wrapping, applying sealing material to said wrapping; causing the sealing material to pass through the wrapping and fill the core at suitable intervals; covering the core with a lead sheet, and compressing the sheet against the core, where the same is filled with sealing material.

No. 452,439.—Production of reclaimed rubber; Rudolph A. Lowenthal, New York. A process of treating rubber waste to reclaim rubber therefrom, said process consisting in decomposing and eliminating the fibre from the stock, partially drying the latter, and reducing it by grinding and sifting to a fine powder of uniform size and quality, preparatory to devulcanization. The reclaimed rubber powder produced by the above process being a vulcanized rubber powder of uniform fineness and quality, and free from metallic particles and similar foreign substances.

Hard Rubber Reminiscences.

THE hard rubber business is now in the last decade of its half century of existence, and in speaking of it Mr. C. A. Hoyt, treasurer of the India Rubber Comb Co., New York, remarked not long ago :

It was in 1851 that our company was organized, taking at that time a store at 44 Cliff Street. Our factory was first at Williamsburg, Long Island, but in 1854 we moved to our present location at College Point. The business has been a steadily increasing one with new processes coming forward, improved machinery, and new uses for hard rubber goods.

Nelson Goodyear was to the hard rubber industry what his brother Charles was to the soft.

Nelson invented a process and a new product, and it has proven a most valuable contribution to the industrial world. As a substitute for the costly ivory it has many advantages. Ivory will absorb grease, it will split, great care has to be taken in washing it, and so on, while hard rubber is cleanly, and has none of the defects named.

Emphasize the fact, however, that I am speaking of hard rubber of good quality, well manufactured and of high grade in each of its constituent ingredients. We make combs that are unbreakable in a practical sense. Of course we do not put them under a trip hammer, but they will stand all ordinarily rough usage. Take the child's round comb. A test of it is that we can bend it back on itself without breaking, something that is found wanting in other available materials for combs or in a poor quality of hard rubber.

It was such a substance as this that Nelson Goodyear gave to the world, and from one use sprung another, like the sapling growing into a mammoth tree ; branches coming from branches until we have an industry which it is difficult to detail in its ramifications and volume.

The comb always held its place in this industry, and the sales have been very large. Combs are a staple article, we have a great number of patterns, some of course in these long years have become obsolete, but those in the trade can readily order from the five or six hundred that remain and they are invariably carried in stock year after year by the retailer.

In back combs we had an excellent trade until the fashion changed, Mrs. Hayes wore them in the White House after they had began to wane in popularity, thus assisting in extending the length of the time of their universal use. Now, elderly ladies wear them, and all classes in Spain cling to their use ; so we are doing a good business in that line yet.

The rubber hair-pin has a large use and cannot readily be displaced.

Early in the history of the business, the telegraphic field became enlarged, and a demand for hard rubber goods in that line sprung up. It was found advantageous to incase the magnets of the ordinary relay in hard rubber, then the knobs of the ordinary Morse key were made of it instead of bone, or ivory, and the switch boards were filled with hard rubber plugs. It is an excellent insulator, durable, clean and not affected readily by acids, in fact possessing all the requisite qualities for handling instruments connected with the electric current. When the War came on, the telegraphic field was greatly enlarged, and we sold quantities of goods to Beardsley and to Chester two large manufacturers in that day.

Then came along the Telephone, (now an immense field) the Electric Light, and later the Railway, each branch with all sorts of inventions representing varied uses, so numerous that one would be confused in attempting to name them.

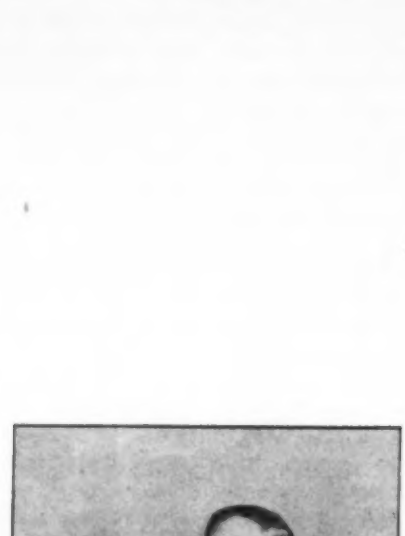
The "druggist sundries" business has been a large one, as it includes the different sorts of syringes, powder projectors, suppositories, ear trumpets, caustic holders, stethescopes, funnels, scoops, and so on. In other branches of industry we find thermometer cases, harness ornaments, in fact the use of hard rubber is found in so many articles, mechanical, toilet, and domestic, that it would take a good sized catalogue to give you an idea of the extensive enumeration possible.

One of the most recent applications of hard rubber now coming into popular favor is the use of this material for buttons. It can be made to imitate closely the texture of clothing of all styles of patterns and variety of color; and as these buttons have natural polish, do not get rusty nor fray like the cloth button, they are having an extensive sale.

In reflecting over the improvements that have been made in the original processes of Goodyear I think that probably one of the greatest was the tin-foil patent, which covered the encasing of the plastic material in a metallic envelope during vulcanization. This allowed the taking of a better impression upon the rubber, and in fact, was at the time the turning point in the business. Our own experience has been that the business has been a steady one in its growth ; the reactions in it have been small from its start, and it has led us forward to constant efforts to keep pace with it. We established a sister factory in Hamburg in 1871, our stockholders taking a large interest in the German company. We believe in an excellent grade of goods, as adulterations and poor workmanship do not, in this business (as well as in many others), retain the trade.

The India Rubber Comb Co. moved its office to its present location in Mercer Street twenty years ago, and of course in that time we have seen our business grow in magnitude, involving every year the handling of hundreds of thousands of dollars worth of goods.

THE Societé d'encouragement pour l'Industrie Nationale, of Paris, has offered two prizes for 1893, the first of which, 3000 francs, will be awarded to any one discovering a substance partially if not wholly taking the place of gutta percha, or to any one who has made any deserving contribution to the knowledge of the planting, acclimatization or improvment in the culture of the gutta percha tree. The second prize of 2000 francs is for the best apparatus or industrial method by means of which the insulation of the different parts of an electrical plant can be measured while the full strength of the current is passing. Further particulars can be obtained from the secretary of the society, 44 Rue de Renner, Paris, before December 1, 1892. Communications should preferably be in French.



DR. MORRIS MATTSON.

Pioneers of the Rubber Trade.

DR. MORRIS MATTSON.

IN writing biographical descriptions of men who have made a name in the rubber world, it is difficult to obtain from those who have survived them and were their associates, a connected history of their acts and lives. A few words dropped by the pioneer to an intimate, often furnishes a vague and the only record of their lives. The following sketch of Dr. Morris Mattson, whose name is borne by a prominent company and whose specialties are found in thousands of families at the present time, is open to the criticism that the dates of events in his life are approximate. Dr. Morris Mattson was born in Chester, Pa., in 1810, and passed his youth and early manhood in that city. His first business venture was the establishment of a newspaper, with which he met with considerable success. Having been educated to the medical profession, he gravitated to Boston late in the forties where he took a high rank as a practising physician. His inventive faculty soon led him to improve various devices in syringes at that time, and in 1851 he had perfected the metallic pump, and two years later introduced the pocket injecting instrument. In 1855 came the elastic pump-syringe with an inlet and outlet. In this there was an infringement on Davidson's inventions and a long litigation ensued. Mattson maintained that the point at issue was antedated by instruments in use in England, but the courts decided against him. Mattson then invented a new form with a rigid inlet tube which holds its own at the present day. Numerous other inventions, such as water-bags, breast-pumps, douches, powder-projectors, etc., formed a list of twenty-eight, ten of which are now alive. Maroon rubber for dental purposes, which he claimed to be free from deleterious substances and which would not be attacked by the acids of the mouth, is still manufactured by a Western company.

Dr. Mattson was singularly fortunate in obtaining financial results from everything he undertook. Patient and persevering, he never yielded until the golden plum was ripe and fell into his hands. He was singularly free from the ups and downs of men who followed the life of a pioneer. Often by his genius apparently sure disaster was turned into great success. As an illustration of his capacity in this direction, he at one time owned a large amount of stock in the Second Avenue Railroad in New York. The building of the Elevated was anxiously viewed in the light of ruin to the surface road. He, with others, attempted to sell his stock, but purchasers were not to be found. In great tribulation at his expected ruin he discussed the matter with a friend, and the only conclusion which could be reached was that if the stock could not be sold, more could be bought. In short, it was time for a big average, or some other desperate movement.

Out of the frying-pan into the fire was the way it looked, but something had to be done, and that quickly; and nothing else could be thought of, so block after block of stock was bought. The surface road turned out to be a natural feeder to the Elevated, and its competition proved of advantage in unforeseen ways, and Dr. Mattson made, it is estimated, $300,000 by this plan of meeting what was supposed to be a calamity. Other ventures proved lucrative, the rubber company which bears his name not being the least so.

He was a very eccentric man. He hated tobacco and never attempted to conceal his aversion for it, which was constantly getting him into trouble. One day he seized an unlighted cigar out of the mouth of a passenger in one of the old stages that passed up and down Broadway and threw it out of the window. An altercation was only prevented by the surprise of the passenger which changed into helplessness at the audacity of the act. He was turned out of a New York hotel on account of his attempts to prevent smoking on the veranda.

He was honest to a marked degree and under no circumstances would he willingly deceive any one. Unwittingly cautioning the public not to use his syringes for immoral purposes, he stimulated their use in an unexpected way, and in spite of his declarations that he had been misconstrued was expelled from his membership in the Boston Medical associations. This led him to remove to New York in 1861. His blundering advertisement was copied by every quack for years afterwards. He was very fond of gastronomical pleasures, and these were really the cause of his death. A half dozen eggs with a pound and a half of meat formed an ordinary meal.

He was a man of brilliant parts, doing many things well. He wrote book after book, was a fluent conversationalist, his inventions were numerous, useful and approached a historical sense, and his business transactions were worthy of the shrewdest mind. He was tall, of slight frame, dark complexioned, with very black eyes. He died at the age of seventy-four, without family, leaving his various inventions to assuage the sufferings of a humanity which cannot but hold him in honored remembrance.

She Knew All About It.

"I GATHER," said the Boston lady, "from the conversation of my nephew, that firemen are in the habit of using rubber hose at their labors."

"Yes."

"That, I presume, is so that they won't get their feet wet," and the Boston lady returned to her book with an air of entire satisfaction over having solved a difficult problem.—*Washington Post.*

THE GREAT EXCEPTION.

Wagley.—I think Bulfinch is the most fortunate man I know.

Wooden.—Why so?

Wagley.—Because he does not have to lay up anything for a rainy day.

Wooden.—How is that?

Wagley.—Why, the more rainy days, the better he likes it; he's in the rubber business.

Notes of the Amazon.

AFTER Pará, Santarem is the most important town on the Amazon, and is 200 miles above the former city. Here is an American colony which is fairly prosperous, a New York gentleman of means taking much interest in it. Cocoa and other staples form the commerce of the place, not much being done in rubber. It has about 200 inhabitants and is fairly healthy.

The river is nothing if not broad. If it were not for the island clumps one could readily get out of sight of land. Let one attempt to cross it in a row-boat and he would not fail to appreciate the magnitude of this big river.

It is hardly possible for a great populous nation to obtain a habitation on the banks of the Amazon. It is hardly fitted for the production of food and supplies for a large number of people. Take cotton for instance. A very long white staple grows well, but to clear for it is to do away with the Seringa tree, and the latter crop is more profitable than any of the products of the temperate climes. Nature does its own planting, hoeing,—everything save the gathering, and comes very nearly doing that as it only needs the stroke of the machete to set the gum trickling.

The crop is a heavy one. Twenty Indians well fed, will make 40,000 lbs. of rubber in a season. A day's work for an Indian is a path of one or two miles long in the forest. In this path he will probably find 150 suitable trees which, one after another he taps, dexterously cutting so as not to penetrate beyond the bark. To go through the bark and not touch the wood gives the best results, and Indian skill is intuitively cultivated to this end. From his early morning task the Indian returns to camp at 9 A. M., and three hours is spent in breakfast and needed rest. At noon he starts out again for the sap, which he can collect in two hours, and then comes the smoking process. The locality is prominent by the peculiar odor of the burning palm nuts. Follow your nose if it is late in the day and you will soon come to an Indian smoking his rubber. After his fire is started he covers it over with an inverted earthen pan 15 inches high and the same in diameter. This forms an arch with admission for air at the bottom. A hole in the top of the pan, when inverted, is a passage for the smoke. He next brings from his shed a form say twelve inches long and nine broad, diamond in shape and slightly oval on one side. On this oval side he pours a dipperful of milk, and after it has ceased to drip in the pail, he passes it quickly into the smoke. Moving it quickly he holds it in the smoke for half a minute, and a change has taken place which is wonderful to the reflective mind. The milk has been set, the white sap has become a layer of fine tough India rubber. In a twinkling he pours over this layer another coat of milk and again the stick goes into the smoke, a process to be repeated thirty or forty times, or until the mass is thick enough to form the biscuit of commerce.

Usually the biscuit remains on the mould or stick twenty-four hours in order to become dry. When first taken off the mould the cakes are of a light gray color, but this changes gradually into the shade to which we are accustomed.

The quality depends upon the care in making and the conditions in gathering. Fine Pará should have no lumps in it, or clotted milk, which is likely to occur on wet days as water is apt to coagulate the milk.

The curing process is invariably carried on at the forest line. Once milk was transported in cans, but this was speedily abandoned, and primitive methods, however they may look to the eye of system and organization, have been found in practice to be the better.

Wealth lies all around you. One burr from the Brazilian nut tree contains two quarts of nuts. A hundred pounds of them in New York are worth $20.00. Go over to Brooklyn when the Manaos steamer comes in, and see the wealth in nuts and rubber that is dumped on to the wharf. Cases of rubber of a value of $500 and more roll by you from the top of a cargo whose foundation is nuts.

In the rubber districts, Farina is cultivated. This is the only flour that the Indian will eat, and the Brazilian uses it largely. It makes good bread.

Passing from the Amazon into the Madeira, we find the rubber trees more abundant, in fact it is the great rubber district. It is 2200 miles long. The change in passing from the Amazon to the Madeira is very perceptible. Now the banks are higher, the country is comparatively dry; and vines and plants are not so marked. Great as the Madeira is, and it is three miles wide at its mouth, it is a child to the mighty Amazon. Fifteen fathoms of water are found in the Amazon 1000 miles from its mouth and steamers, war vessels, and all sorts of craft, pass this point as if it were a mighty ocean. Reflect a moment, how many rivers in America would allow this. The puffing flat-bottom steamer is the only vessel on the Mississippi above New Orleans, and all rivers choke off free transportation a few miles from their mouths.

All transportation up the Madeira starts from Manaos, the ideal city of the simple Amazonese. Here the people call the Amazon the Solimoens, and farther up another change is made, and it is named Maranon.

Manaos is really on the Rio Negros, but it is near a fork of the two rivers which junction is one of the sights of the Amazon. The Negros, as its name indicates, is a black stream, not very rapid at this place, but twice as wide as the Solimoens. The two rivers meet at nearly right angles, the blue black of the broad river pressing slowly out the torrent, yellow in color, of the Amazon. The latter, vigorous in motion, dashes fiercely at it, at times holding it back, but as it is colder than the other it in the end sinks out of sight, passing underneath for miles, when its yellow current emerges in eddies at the surface. The Indians apply realistic names to these two rivers in view of their peculiarities; one they call the "Living River," the other the "Dead."

The impression that the banks of these rivers are full of game and animals is far from correct. One sees very few of the larger animals, even in an extended trip.

The country of course is in the hands of the natives, and will never emerge from its present methods and modes

until other nations emigrate to it. If it could be found practicable to introduce systematic labor in the forests, great wealth could be obtained, but the present outlook is not favorable for any such change.

The Singer Manufacturing Co.'s Factory.

WILLIAM M. HOUSE, the General Sales Agent of the Singer Manufacturing Co., one day last week invited a party of newspaper friends to inspect the mammoth factories of that company at Elizabethport, N. J. After a ride from New York, the party sat down to a substantial lunch in one of the dining rooms of the company, and then proceeded to *do* the works.

Some idea of the extent of the works can be gathered from the following approximate statistics. The grounds of the company occupy about fifty acres on Newark Bay; the manufacturing floor room comprises nearly twenty acres; there are seven miles of track in the yard, and the pay roll at date has 4029 employes upon its pages. The main building is 860 feet long and six stories high, and two other buildings are each 200 feet long. There are several minor buildings in addition.

Ninety-four tons of iron are used per day, and 8000 sewing machines pass through the shipping department per week. The company are also large manufacturers of motors, boilers, etc., for other parties. About 3500 horse power of steam is constantly generated to make this immense output.

One point strikes the observer in a tour through the shops—the perfect subdivision of labor. There are also remarkable cleanliness, well lighted workshops, and everywhere the use of labor saving devices. The result is remarkable. The girl who does nothing but thread needles day after day and month after month, has long since abandoned the slow method of taking one at a time. Taking a handful which contained certainly a dozen needles, the eyes were all brought in line by evening the points against the bench, and with the other hand the thread was passed through the whole in one movement. This is an illustration of what is going on in every portion of the works. The eyes of the needles are quickly stamped out by a similar deftness of movement. Machines were in operation drilling six screw holes in different parts of the standard at once, and single operatives were respectively tending two.

Thirteen drops were doing their giant work in one place, and nine cupolas in a foundry which occupied four acres of ground were pouring out molten metal which kept two or three regiments of hands busy.

The department for the making of machine screws is the largest in the country yet the output is all required for the manufactures of the company. Economical devices were everywhere present. The oil in the refuse metal shavings is extracted pailful after pailful by an immense pressure. Standards are japanned by dipping them three at a time in a huge vat. The japanning is done on a huge scale, 400 machines being the capacity of a single chamber, and 27 kilns being in one room.

The Singer establishment was partially destroyed by fire about thirteen months ago, and the work of reconstruction upon a basis of advanced ideas has proceeded ever since and at the present time is hardly completed.

The establishment is remarkable and unique. Probably no better example of the economical results of systematized labor, wherein each department in a limited field contributes to a large and important general result, can be found in the world.

The Hamilton Trouble.

THE failure of the Hamilton Rubber Co., of Trenton, N. J., was no great surprise to the trade as they had in a measure been prepared for something of the kind by the filing of large mortgages early in May.

The Hamilton Rubber Co. dates back to 1876, when it had as incorporators, James Brook, Jas. F. Brook, Chas. H. Skirm and Watson F. Van Camp. They had a capital of $60,000, of which $45,000 was paid in. At the present time, of the 600 shares of stock in the company, Mr. Jos. Whitehead, the President, owns 594. The Superintendent of the mill, Mr. Frank Whitehead, and their Chicago agent, Mr. Edgar Whitehead, are both sons of the president of the company. The liabilities are thought to be over $100,000. The sum total of their resources over and above real estate amounts to $70,000, $40,000 of which is in goods and crude materials ready for manufacture. Their real estate figures at $50,000, covered by a mortgage of $125,000.

Hon. F. A. Magowan is the receiver, with a bond of $50,000.

The Central Rubber Selling Co.

THE Trenton company that goes under this name was formed for the purpose of purchasing supplies for all the rubber mills in Trenton, and securing to them the advantages that the purchase of enormous quantities of goods ought to bring. For some time, however, the Star Rubber Co., and the Hamilton Rubber Co., have been the only ones that have used it as a purchasing agency. Mr. John W. Britton was the President and Treasurer, but he is out with a printed statement to the effect that although he was elected as such his actions were entirely controlled by Thos. A. Bell, the Secretary of the Star Rubber Company.

Commercial Affairs and Life in Manaos.

"THERE may be yellow fever lurking in the climate of Pará and Manaos," said Capt. R. O. Olyphant, of the steamer *Cyril*, a few days ago, "but I believe I prefer it to this weather. Here it is high noon, and I have two overcoats on and am nearly frozen.

"We left Pará last month, and there were thirty-eight cases of fever at the time of our leaving, but that is nothing to your record of the grip and other kindred diseases here, and the fatality of the grip is greater than that of yellow fever.

"There is plenty going on up the Amazon. At Manaos, when I left, a new president had been sent there. He was a republican and seemed to be much disliked. A large procession of nearly 3000 people was formed with several bands of music to give expression to their prevailing sentiments of regret in parting with the outgoing officer. It seemed to show, and was accepted as showing the tendency

of the political tide in that part of the Republic. This feeling may quiet down, but just at present a good many think the predicted secession of those States will take place in a year. Manaos is to have telegraphic communication with the outside world. The cable has been ordered, and it will be ready within a year. It will be laid in the bed of the Amazon. This will give Manaos an advantage far reaching in its effect. It is believed that this city will then become to the rubber trade what Pará is now. Receipts and stocks can be more accurately stated, and the outside world will practically be 1000 miles nearer the production of the gum. Manaos has been a dead place to visit in the past, and compared with metropolitan cities it is yet. There are now four or five fair to good hotels, the Hotel France being called the best. Its rates are about $2.50 per day in American money.

"Here you can have a game of billiards, hear the thrum of the piano or a burst of song from the parlor, but beyond that you see little life. Once in a while an opera troupe gets up there, and marks a new era. A glass of lager can be had for a number of milreis amounting to a trifle over 26 cents as exchange now stands, and other extras are in proportion, which rather quenches the enthusiasm of the European who thought he had a small fortune in the glittering promises held out to him to try his luck in the rubber districts of the Amazon.

"By the way, there is an equatorial trick down there of building the houses of porous brick, so that currents can circulate through them, a great relief to the inhabitants.

"Manaos has a harbor in which hundreds of vessels can anchor, which will not be a drawback when it gets nearer the outside world in the way of telegraphic communication. It is a more healthy place than Pará, being inland and on a higher level.

"There are many new steamers on the Amazon, and the channels of transportation are being constantly improved. We had a passenger up with us who has gone to England to contract for two steamers to go into the rubber trade up in Bolivia. As they have to be used above the rapids, they will be built in sections, so that they can be taken apart and carried by the falls. While rubber is now very generally carried down the Amazon in steam vessels, nuts and such freight are yet transported in huge canoes and paddled the whole distance, the round trip occupying more than six months. So you can see that there is plenty of room for capital to go into steam.

"The rubber season was about over when I left, although there was considerable coming from beyond Manaos, from the Madeira and the Rio Negro. We brought up little this time, and do not expect to get any for the next trip north. We get plenty of nuts now. There are a good number of new arrivals of rubber men at Manaos, but they drop off pretty fast; it is difficult to determine what course of habits is the best for that climate. There is a good deal of hard drinking, which often causes disease, but then the teetotaller does not seem to get along any better, and there is a continual discussion going on whether it is best to abstain or not. We will be back here again in July. We make five trips a year."

Trade Notes.

ON Lake Street in Chicago, is a new and handsome rubber store, bearing the name of the Columbia Rubber Works Co., R. T. Whelpley, Manager. The goods carried in stock are the Mechanical Goods, Stationers' and Druggists' Specialties of the B. F. Goodrich Co., the hard rubber goods of the Goodrich Hard Rubber Co., and the belting, packing, hose, matting, etc. of the New Jersey Car Spring and Rubber Co. As the circular of announcement very justly says: "As each of the above named companies has earned and established a reputation for manufacturing only the highest grade of goods, purchasers are taking no chances in placing their orders, but can feel a confidence which is not possible if dealing in an inferior make. We feel warranted in stating that we are offering for sale rubber goods of the most excellent and finest character, made by the most reputable manufacturers in this country, at prices that will defy competition where quality is considered and compared." Good luck go with you, Mr. Whelpley, and with the live concerns that you represent.

—Messrs. Ellis & Goltermann moved in the latter part of April from No. 28 College Place to their new store No. 88 Leonard Street. This firm will soon put on the market an atomizer equal in style and finish to those now imported from Germany and France, and at about one-half of the cost. This atomizer will be of cut, or decorated glass, and silver-mounted in various styles. It is well-known that the bulbs attached to atomizers manufactured in this country have the objection of being pendant at the extremity of a tube which gives a syringe-like appearance to the instrument. In the styles from abroad, the bulb is attached directly to a reservoir which relieves the instrument of a certain awkwardness in appearance, and makes it a tasty piece of toilet ware. The reservoir of cut glass handsomely trimmed in silver with its colored bulb, looks not unlike a handsome cologne bottle. This is the first attempt in this country to place a tasty atomizer of American manufacture on the market, and its relative cheapness betokens for it a large sale.

—At an auction sale of miscellaneous stocks held in New York last month, 500 shares of the Boston Rubber Shoe Co. were sold at $410 each, and 400 of the Goodyear India Rubber Glove Co. at $130 each. The par value of the former stock is $100 and the latter $25. The sales were made to close an estate and it is understood that the purchases were made by the respective companies. Rubber stocks hold their own pretty well in these times it would seem.

—An advertising novelty is being exhibited in the show windows of the Singer Manufacturing Co., on Broadway. A cabinet sewing machine opens its doors with no apparent cause, the folding leaf turns over, then the machine itself appears from its recess and finally turns upon its side showing the working of all parts under its base. The steps in the movement are retraced in the same manner and the machine comes to rest and is closed only to go through the entire operation again. It is an advertising novelty of the first order as the power cannot be seen or traced. It is operated by concealed motors which derive their power from a distant dynamo.

—The Hall Rubber Company, of Portland, Maine, has begun the manufacture of ladies' rubber garments at their new store on Congress Street. They will put in about sixty machines; 22 are now in operation. An electric motor has been put in, which will drive the entire plant. The hands employed are Portland people, and when the entire lot of machines are set in operation, the pay roll will amount to more than one hundred dollars a day.

—A unique sight is daily to be seen in the yard of the Singer Manufacturing Co., at Elizabethport, N. J. A half hour is allowed for the noon-day meal, and it is invariably taken in the shops, or in the immediate vicinity. The whistle sounds and instantly 500 or more boys or young men appear on a run armed with tin pails, some carrying a dozen. They immediately repair to some adjoining saloons where the pails are filled with beer, which shortly before has been drawn into tubs so as to allow of expeditious dipping. The beer is then carried to waiting comrades in the factories. The whole is a sight not elsewhere duplicated, and affords a great deal of amusement to the beholder who is not prejudiced with teetotalistic views.

—J. W. Godfrey, of the New York Insulated Wire Co., has returned from his Western trip, and R. E. Gallaher has gone to Chicago.

—The Metropolitan people say they are busy in the mechanical department, and are turning out a good many goods. The demand has been very fair this season.

—The Broadway clothing concerns are not having a very hard time keeping up with orders. The London Rubber Clothing Co. say they are importing very fairly of 60-inch cloths, which are not yet made in this country.

—"Why are 60-inch cloths not made in this country?" was asked of one of the domestic manufacturers. "Of course we can make anything," said he, "but it takes time, and we never have thought that there was a crying need for them. Such innovations move along slowly. In the first place it would require an expenditure of about $17,000 for machinery. Then all our patterns are for the present widths, and we would have to change those to correspond. Then the linings would have to be changed. All this is necessary to prevent waste of material. These factors arranged satisfactorily, then would come that of labor. The weaver in this country is used to the narrow width, and to watch the shuttle for an extra width requires more care. If it is not done with attention imperfections may creep in which would negative all the advantages of the extra width. The time saved in weaving is the only advantage of the maximum widths and it is not of such moment as to require any haste in leaping into new ideas. Thirty-six inches is a popular width with us, but we make as high as 54 inch."

—The Works of the Standard Rubber Co. at Campello, Mass., have started up on full time; good orders having been taken. In fact, the rubber clothing men throughout are beginning to feel the impetus of orders for fall work, and are looking at the world much more cheerfully.

—In reply to the question from many friends in the trade, we would say that no news whatever has reached us of the whereabouts or the fate of James Brook, and his disappearance is as much a mystery as ever.

—Mr. J. H. Kearnes, formerly superintendent of the Boston Car Spring Co., has accepted a position with the Overman Wheel Co., at Chicopee Falls, Mass, where he will superintend the making of bicycle tires for that company.

—Augustus N. Loring, President of the Columbia Rubber Co., has moved from Boston to his summer residence at Swampscott, Mass.

—Mr. Fred Kalloch, of the Kalloch Rubber Co., of Reading, Mass., called at the office of THE INDIA RUBBER WORLD recently, and spoke encouragingly of the fall orders already beginning to come in on rubber clothing and other specialties that he manufactures.

—Frank E. Hall, whose buttons are being used so largely on rubber clothing throughout the country, has moved his office from 67 Chauncy Street, to the Jordan Building on Bedford Street, Boston, where his office number is 77.

—Mr. R. A. Leigh, who had formerly charge of the sales of the Boston Car Spring Co., is with the Stoughton Rubber Co., at their Boston store, and is handling the products of the New York Belting & Packing Co. throughout New England.

—A gum known as Maltha, which has been the subject of long experimentation on the part of Stephen M. Allen, who was one of the pioneers of the rubber trade, is very soon to be put on the market. The gum is a black substitute, and is said to have shown some remarkable qualities. The company back of it has a mill at Natick, Mass., another at Wendell, Mass., while a third mill now in process of construction at Duxbury, Mass., will be used for the manufacture of a white substitute, similar to the better grades of English and German rubber substitute.

—The Wellman sole cutting machine has been thoroughly perfected after much thought and study, and is now running very finely. The last one put in at the works of the Boston Rubber Shoe Co. is said to give the best of satisfaction, and while cutting the most difficult soling, has utterly done away with the complaints that are constantly coming from the boot and shoe makers, as to the shape, size, and general contour of the soles that come from hand cutters. A number of other rubber shoe men have also put in orders for this machine.

—An evidence of prosperity that is pleasing to note is the removal of the Norwich Rubber Store, Norwich, Conn., into the large and commodious new quarters fitted up expressly for it in the Breed Opera House building, where three stores have developed into one that is among the handsomest in the city. A partition divides the new store into two compartments, the westerly side being devoted entirely to the display of rubber goods in great variety. A glass case at the rear of this department contains the most popular styles of Mackintosh coats for ladies and gentlemen. The rubber store was originally opened and made a success by Mr. Noyes E. Alling, who has now associated with himself his brother, Mr. W. S. Alling, of Winsted. With its numerous departments their complete new establishment will hereafter stand in the front rank of Norwich business houses.

—About twenty moulders, in the employ of John E. Thropp, a Trenton manufacturer of rubber machinery, struck recently. They had been working on a give and take plan as to overtime, and struck because pay was refused for working until 8 o'clock at night.

—The Rubber Valve and Spring Company, of Trenton, N. J., has gone into insolvency. O. O. Bowman was appointed receiver. Their liabilities are $10,000 and their assets about $8000.

—A rubber factory is being built near the Miles Standish place at South Duxbury, Mass., by Stephen M. Allen, of Boston. William Bennett, a well-known rubber man is to have charge of the works which will manufacture chemical rubber and substitutes.

—The Woonsocket Rubber Co. received recently an order from Germany for one hundred cases women's croquets, sixty cases men and women's specialties and twenty-seven cases men's heavy arctics. Mr. E. H. Cutler, the selling agent, while abroad last year, laid a very deep foundation for a good business. He went to recuperate, but as he happened to belong to a class of men who, when they are thrown into the Nile come up with fish in their mouths, he thus gained health and business in a little outing.

—The Southern Rubber Co., 1206 Main Street, Richmond, Va., have recently added to their business a large plant for the manufacture of rubber stamps, seals, stencils, etc., making a specialty of fac-similes.

—Says a Jonesboro, Indiana, paper exultingly: "The machinery will soon be in the rubber factory, then we'll hear the whistle blow."

—W. F. Bowers, president of the Bowers Rubber Company, of San Francisco, Cal., has received a patent on an improved swinging hose reel. It is to be connected with stand-pipe and arranged to swing at any angle, allowing the hose to be pulled off in any direction. The water passes through the bracket and hub of the reel into the hose.

—Immediately following their late fire, the store of the Goodyear Gossamer Co., in Lowell, Mass., has been closed, but now, refitted and restocked, it has been opened, and, judging from the additions and improvements that have been made, they will do a more extensive wholesale and retail business than ever before. Besides the large stock of gossamers, mackintoshes and general rubber clothing, they also have a complete stock of all rubber novelties, druggists' sundries, boots, shoes, horse clothing, oiled goods, toys, rubber belting, packing and mechanical goods. The store itself has been much improved since the fire, the ladies' department being handsomely carpeted, furnished with mirrors, etc. Mr. Washburn is in charge, and the store again starts business under the most favorable auspices.

—The Mattson Rubber Co. have determined for the present to close their factory Saturdays. Half holidays are not practical in obtaining economical results. Steam is wasted and labor does not reach a high state of efficiency with a half holiday in prospect.

—The Peerless Rubber Co. have issued a new catalogue which they enclose in a neat leather two pocket case. The case is nicely gotten up with an advertisement of the company on the inside. The catalogue comprises 38 pages, many of them in colors, with a white finished cover, and is a neat affair. In it is a full list of goods made by the company with prices. The officers of the company say that the "hot water tank and washout hose," a special article for railroads, is meeting with a large sale. It will conduct hot water and steam up to 35 pounds. The jacket and inner tubing are identical in their compounds, and it is made three or four ply. It will not crack or harden from heat or steam and for service it is reported equal to the best grade of cold water hose.

—The *Anne R. Bishop* is on the way from Pará to Providence with a consignment of 80 tons of rubber for the Woonsocket Rubber Co.

—The New Jersey Rubber Co. has located its New York office at 52 and 54 Reade Street, where it has fitted up handsome and commodious quarters. The Boston office has been abandoned, Mr. R. H. Griffin hereafter making his headquarters in New York, but he will still have charge of the Eastern trade and Mr. E. B. Preston will still continue with the Western trade. The Chicago office will be retained. Mr. Preston is on a visit to that city at the present time. The company is very well occupied with orders at its factory, and with new dies and lasts is making more specialties. A new second called the India rubber shoe to take the place of the Goodyear is now making. It is reported to be of as good quality as any second in the country, is well finished and neat in appearance, and doubtless will have a good sale.

—O. R. Howe, of Lynn, Mass., dealer in all kinds of rubber goods, belting and engine supplies, has opened a new store on Central Avenue, and he has now one of the best equipped establishments of the kind in the State. Mr. Howe succeeded C. O. Beede in business after the great fire in November, 1889, and previous to that time served fourteen years with Mr. Beede, so that he has the best of knowledge of the trade.

—The sheriff recently sold out a portion of the stock of William B. Brooke & Co., dealer in rubber goods at 40 John Street, New York, against whom attachments were issued on March 24 The sale realized $2100, enough to satisfy the first execution.

—The New Jersey Spring Car and Rubber Company, of Jersey City, N. J., obtained judgment against George P. Clark, of Windsor Locks, Conn., for $1087.13 in their recent suit.

—Mr. Frederick Sharp, of Pittsfield, Mass., who formerly conducted a large rubber store in Wollison block, has decided to open a new store. He has leased the apartments on North Street, where he will fit up in good style and put in a full line of rubber goods.

—The Cleveland Rubber Paint Co., of Cleveland, Ohio, are to have a five-story factory, to be located on Boston Avenue, east of Halsted Street. It will cover 41x101 feet, and have a front of pressed brick with stone trimmings. The interior will have a 75-horse power boiler and a 50-horse power engine elevator, iron stairs, and fire escapes front and rear, the whole to cost $30,000.

—Both factories of the Boston Rubber Shoe Company at Edgeworth and the Fells started up on full time May 18, after the annual shut down of two weeks. It is stated that they have orders enough on hand to keep both factories running on full time all summer.

—The Hohmann & Maurer Manufacturing Co., Brooklyn, N. Y., have lately put on the market a new steam gauge, the face of which is of Egyptian Bronze, which is totally black in color, and upon it are placed the white figures. Of course this gives a ready reading. The ordinary engraved figures upon a metal surface, neutral in its tint, is open to the drawback of obscurity in anything that pertains to steam use is inconvenient, if not dangerous. We have often thought that something like this would be a good thing, but like Hoolihan and the Electric Light, some one else has invented it first. What we had in mind was a pair of stereoscopic spectacles which would separate the figures from the background, but we now discover too late that we fired over the head of simplicity. The business of this company is excellent and with its new equipment it is keeping pace with orders fairly well. It was not long ago that the famous house of Pinelli & Co., Milan, Italy, sent for some of the superior goods manufactured by this establishment.

—Freights by canal West are now above the views of interior merchants and a large quantity of purchases are being held in New York subject to call. Rubber goods at this season are slow freight, as the need for them is not imperative and they generally take canal and lake routes. South they go by steamship and rail lines. From the factories rail and water lines are adopted, as much of the latter being used as practical. Cartage in New York is an item of consequence, some of the factories keeping a half dozen drays busy day by day throughout the year. This work is usually done by contract, as piece work would roll into money very fast.

—Among those who in the last few years have steered clear of combinations and trusts is the Home Rubber Co., of Trenton, N. J. As a result of this policy of running their own business and attending to it, they have built up a large and valuable trade and are to-day on a solid basis. Their plant has been increased from one of ordinary dimensions to one of the largest and finest manufactories, equipped with the latest machinery for the manufacture of mechanical goods. This example of prosperity resulting from conformity to the principles enunciated in our leading editorial published in this issue is apposite. It is well to note such examples.

—At the annual meeting of the stockholders of the Lycoming Rubber Company the following board of directors for the current year was elected: B. C. Bowman, S. N. Williams, John A. Gamble, William Howard, S. T. Foresman, William M. Harrison. A summary of last season's business was read, showing substantial gains over previous years. The company anticipate doing a larger volume of business this year than ever, and place their figures at the three-quarter million mark. The Lycoming brand is known far and wide, and the probabilities are that the company's business will exceed $750,000 this year. It is one of the most substantial of Williamsport, Pa., and has a larger pay roll than any other manufacturing plant in that city.

—The strike that was said to have occurred at the Habirshaw India Rubber and Gutta Percha Insulating Company's works in Yonkers, N. Y., turns out to have been no strike at all, but that half a dozen girls were discharged on their expressing dissatisfaction with their work, and that others employed to fill the places thus made vacant. It is said that these hands probably became dissatisfied because they did not like the new foreman placed over them, and who is considered fully competent to fill the position.

—The stock of Edmund E. Birchett, dealer in rubber goods, Philadelphia, Penn., was recently sold out by the sheriff.

—Three gear wheels in the Kleinert Rubber factory at College Point, Long Island, broke at the same instant, causing damage to the amount of $1000. No person was injured.

—The sheriff's sale of the machinery, etc., of the Roxite Company, New York, which manufactured a substitute for hard rubber, at 131st Street, realized $2400.

—The Setauket (Long Island) Rubber Company has taken a large contract for lawn tennis shoes and has contracted with many of the sewing women of the vicinity for the work on the uppers, which they are enabled to do at their homes. Although the price paid is small the women are enabled to make fair wages on this work.

—There was a strike of braiders at the E. Read Goodridge Co.'s Rubber Works, at Newport, R. I., recently. It was not a strike for a raise in wages, but the going out was due to a misconception of the motives of the management. Formerly all hands were paid by the month, but to comply with the weekly payment law a change has been necessitated and the hands have been paid each week. At the works, however, braiding is done by the piece and the piece work can be measured up only once a fortnight, which makes weekly payments awkward, and forced the management to go upon an average system. Then, as the law allows, a week's pay or portion thereof was kept back to protect the works against all hands leaving at once. These facts the girls didn't understand, and but few asked. Tuesday last a number of girls were missing and, as they had said nothing of their dissatisfaction, the foreman was at loss to account for their disappearance. Upon inquiry among those who remained, the reason of the absence was learned and arrangements were made at once to make up for the lost hands.

—H. G. Wheeler, of Marlboro, Mass., enters into co-partnership in the Marlboro Rubber store with A. F. Barnard, in place of L. M. Frye, who will hereafter devote his whole time to the endowment insurance orders.

—The new celluloid factory in Wyoming, New Jersey, is nearing completion and is expected to be in operation in a short time.

—McCartney, Haines & Co., dealers in Rubber goods, Philadelphia, Penn., have assigned.

—Late Rio papers intimate that the Government is uneasy about political affairs in the State of Amazon.

—The New England Fire & Heat Regulator Co., whose electric controlling device for vulcanizers and dry heaters has been received so well by the rubber trade, have moved their office from 65 Federal to 70 Pearl Street, Boston.

—G. H. Lippelt, President of the Zittlosen Tent & Awning Co., of St. Louis, has just returned from a trip to the Pacific Coast, coming straight to Boston on his way back, going from there to New York and then back to St. Louis. His trade both in rubber goods and oil clothing he reports as prosperous and constantly increasing.

—This has been an excellent year for the rubber shield business. One year ago the Mattson Rubber Co. was carrying in stock three or four hundred gross, now they cannot keep ten gross ahead of orders. They are going everywhere, England, France, South America, Australia, Cuba, etc.

—A new insulated wire company, known as the Bell Rock Electric Conductor Co., has been formed in Malden, and is now turning out work at its plant at Maplewood, Mass.

—A patent for a bellows fold coupling was issued March 31, 1891, to Edward L. Perry, of Paterson, N. J., the President of the Peerless Rubber Co. This is the well-known vestibule coupling used on the Pullman cars and which forms a covered passage way from one car to another, so that passengers may pass the length of a train without exposing themselves to the open air. Great difficulty has been had in making these bellows arrangements strong enough to resist the wear and tear which is acknowledged to be so great in every part of train service. The joining of the textile layers has been a peculiarly weak point, as they were arranged to double upon themselves, and did not extend from one fold to another.

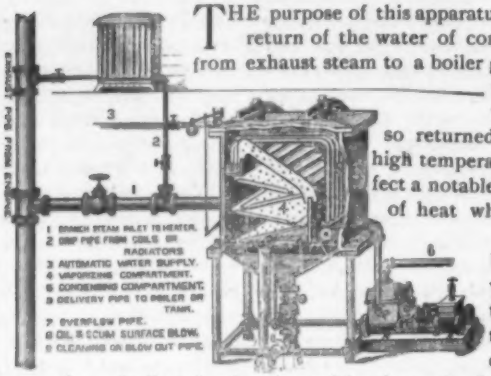
—Mr. Perry, in his invention, forms a fabric of continuous strips, part of them rubber and part duck. The textile strips are confined between the rubber, and all are continuous beyond the angles which form the top and bottom of the bellows. The ends can be strengthened by additional strips. The rubber strips are applied in a plastic state, but so that a proper degree of vulcanization can be reached, as flexibility is important. The fabric so prepared is hot rolled and then vulcanized. The angles are reinforced by stays or gussets, but if the latter break the fabric will not fall apart, as was the case when the layers folded upon themselves; the parts simply pulling out straight. The invention has been some time in active use and is important, as it renders practical a convenience now deemed essential to comfort in railway travelling.

—The Ayres & Foster heel plate has been adopted by several of the leading companies. Its use is to prevent the uneven wear of the heel and is specially desirable for fishermen and for rough usage in general.

—The Woonsocket Rubber Co. is making some good shipments of shoes to Paris, to fill orders secured by its Boston house. The goods are shipped by the way of New York and form several consignments.

—The Magnolia Anti Friction Metal Co., whose advertisement appears in this issue, is in receipt of a gold medal and a handsome diploma from the International Electrical Exhibition held in Edinburgh in 1890, as an award for the best anti-friction metal used in bearings. This exhibition was the largest electrical display ever held, and the medal is one of beauty in appearance and taste in design. On the face is an allegorical representation of Commerce and on the obverse a shield emitting forked lightning with the word Atnami expressed in bold letters. The diploma is of parchment, generous in size, and is a model of allegorical art with a mingling of strong Scotch sense when it gets down to the business of relating its particular mission with regard to the metal it commends.

Webster's "Vacuum" Exhaust Steam Economizer.



THE purpose of this apparatus is by the return of the water of condensation from exhaust steam to a boiler generating the steam, the water so returned being at high temperature, to effect a notable economy of heat which would otherwise be wasted, while at the same time a complete separation of oil and other impurities from the heated feed water is effected. The temperature at which the water may be fed to the boiler from the "economizer" it is claimed may closely approximate 210° F. to 212° F., while so effective is the condensation and the action of the pump that instead of exhausting against a back pressure, the engine, to the exhaust of which the apparatus is attached, discharges its spent steam into a partial vacuum.

It is a species of jet condenser, in which the jet water is so finely divided, as to afford an enormously extended surface contact, without the use of an excessive quantity of condensing water.

It is claimed for this device that it operates much more promptly by reason of bringing the exhaust and the jet water into direct contact, than it is possible to realize with any of the many forms of coil feed-water heaters which impart their heat only indirectly to the feed-water; and furthermore that the utilization of the heat units in the exhaust is much more complete than in any of the indirect forms of apparatus. When applied to a steam-heating plant, the apparatus, acting as a vacuum chamber, permits the exhaust steam to be utilized for heating buildings, with the most satisfactory results, the condenser relieving the entire pipe line of back pressure, and facilitating the rapid circulation of the exhaust.

This apparatus has been widely introduced, and its operation has given general satisfaction. The manufacturers are Messrs. Warren Webster & Co., 491 North Third Street, Philadelphia, Pa., who have branches at 159 La Salle Street, Chicago, and 74 Cortlandt Street, New York. The firm have issued a handsomely printed seventy-two page catalogue, which gives statements relative to the superiority of this apparatus over pressure feed-water heaters, with phototypes of applications, testimonials from users, etc., which will be sent on application. Messrs. Lowenthal & Morgouston of Jersey City, have, we understand, put in one of these economizers with very excellent results.

The Bosworth Feed-water and Steam Appliances.

THE Bosworth Pressure Regulator apparatus consists of the Pump Governor (applied to a steam pump) as described and illustrated in March issue, in connection with another instrument, which, acted upon by fluid pressure within a receiver, accumulator or chamber of any kind, will close or open an air valve.

This instrument consists of a Bourdon tube spring opening into a pressure chamber. Its free end is connected by an adjustable rod, to a lever of the air valve, opening into a pipe leading to the cylinder of the Pump Governor. The pressure within a Bourdon tube spring tends to *straighten it*, and the movement of its free end under varying pressure opens and closes the air valve, to regulate the pressure in the cylinder, and so *govern* the action of the steam pump. The instrument is susceptible of such fine adjustment, that pressure can be maintained almost exactly at any desired point. The operation of the Pressure Regulator is substantially the same as that of the Feed-Water Regulator, described in our March issue. In both, the things to be maintained—the water-line in the boiler, and the pressure in the chamber—by their very slight variations initiate the forces which control them, to a degree of perfection claimed to have been never before attained.

By means of a small float-chamber communicating with the steam and water spaces of a boiler and suitable clock work, the Bosworth Feed-Water Recorder registers on a paper dial the rise and fall of water in the boiler to which it is attached.

The Bosworth Feed-Water Regulator and Recorder is a combination of the Feed-Water Recorder, last mentioned, and the Feed-Water Regulator, previously described, and is for the double purpose of maintaining an even water-line in the boiler, and recording this result on a paper dial.

The importance of a constant water-line in a steam boiler and the difficulty of maintaining it in the ordinary way, even by the most careful engineer, are well understood. Low water and a low fire are as likely as not to occur at the same time, and then lower pressure and lessened power are inevitable; the result of which is slackened speed of machinery, diminished product and actual loss to the establishment. All this is avoided by the use of the Bosworth Apparatus, whereby the water-line is so evenly maintained that the firing can be reduced to a system, by which a steady speed of machinery and regular product are assured. By an even water-line and systematic firing, a considerable saving in fuel is effected, and for the same reason, the life and strength of the boiler are preserved, and its durability greatly prolonged. To these economies may be added the more important consideration of *safety* and *security* to life and property which are afforded by the use of this apparatus.

These valuable inventions are fully covered by Letters Patent of the United States and Great Britain. They are controlled exclusively by the Crosby Steam Gage & Valve Co. of Boston, Mass., U. S. A., by whom they are manufactured and sold.

ONE of the neatest pocket catalogues and price-lists it has ever been our pleasure to inspect is that of the Boston Rubber Shoe Co. The cuts are so finely executed and printed that the texture of the materials in any one of the numerous articles catalogued is perceived at a glance by any one at all familiar with rubber goods. The typography is also superb. We may add that the goods made by this well-known firm are of a character entirely consonant with the artistic style of their catalogue.

THE India Rubber Glove Co. is meeting with much success in placing on the market the combination syringe made under the patents of Thomas Mitchell. It consists of the ordinary water-bag with a side attachment. To this can be fastened another attachment which by the pressure of the patient sitting upon it renders the syringe automatic. With the pressure of the hands the ordinary syringe is formed. A long tube attached to the bag obviously forms a fountain syringe. It is peculiarly useful in travelling as the different forms are comprised in a single instrument.

The Star Rubber Company's Failure.

AT the present time the failure of the Star Rubber Co., of Trenton, N. J., is still an absorbing topic of conversation. The first rumors of trouble were in the form of statements that they had trouble in marketing their paper. Then came a report that one of their officials said that money with them was exceedingly scarce, as they had lots of paper locked up in their office safe which they could not use. Following this came the whisper that they were insolvent. This reaching Boston, C. S. Knowles, for twelve years their selling agent for New England, at once attached the stock in his store at 7 Arch Street, for advances made by him for goods which amounted to nearly $30,000. This occurred Saturday, May 23d. At the same time the officials of the Star were in close consultation with their counsel and were seeking the County Clerk. Saturday afternoon being a half holiday they could not do what they had in mind, but at one minute past twelve Sunday night they had his office opened and mortgages recorded as follows:

Jonathan Steward, President of the Company, $151,600.95.

Thomas A. Bell, Secretary of the Company, $88,695.93.

Philip P. Dunn, one of the Directors, $56,041.21.

William F. Vannest, one of the Directors, $47,257.51.

First National Bank of Trenton, $56,314.97.

Bordentown Banking Company, $32,761.73.

William C. Ivins, $12,000.

A. V. Manning, $10,000.

Trenton Banking Company, $1,975.65.

For a time it was thought they might go on, but shortly after this came the petition for the appointment of a receiver. In this statement it was set forth that the liabilities were over $600,000, and that the assets according to the inventory of December 31, 1890, were less than $400,000. The company have real estate that would hardly bring $100,000, which, before the last filing of mortgages was already mortgaged for $20,000 to the Trenton Savings Society, and which also bore a second mortgage of $1000.

Mr. Thos. A. Bell, the Secretary of the Company, has been for a number of years a prominent business man in Trenton. He was also manager and stockholder in the Trenton China Co., which has assigned. He had a large interest in the N. J. Flint and Spar Works which has recently filed a mortgage in the State of Maryland. Of late he acquired an interest in the pottery owned by I. Hart Brewer, but the amount of his holdings there is not known. He was also treasurer and secretary of the Mechanical Rubber Manufacturing Association, but has sent in his resignation together with a check for the moneys held by him amounting to $1,657.85, and has handed the minute book, vouchers, etc., to the president.

The receiver appointed was Oliver O. Bowman, president of the Terra Cotta Works, whose bond is $100,000.

Mr. Bell's trouble has financially wrecked his father-in-law, Philip H. Dunn, who has tendered his resignation as President of the First National Bank of Trenton, and gone into retirement. It is reported that he is partially deranged as a result of the sudden blow.

The statement of the receiver is not yet prepared, but is looked for with an unusual degree of interest.

The Star Rubber Co. was formerly known as the Mead Rubber Co., but in 1872 was reorganized, called the "Star," and capitalized at $100,000; subsequently this was increased to $275,000.

Commercial Travellers in South America.

THE bureau of the American republics furnishes the following extract from a private letter from an old merchant in Honduras, that contains important suggestions to exporters in this country: "There exists," he writes, "a reason that could be well added to those you give for the failure of the merchants of the United States to capture the Latin-American trade. That they do not send reliable agents who can speak the language, and are well acquainted with the habits, tastes, and wants of the people. English and German houses avail themselves of the services of such men, and the consequence is they get the business. As an instance of this, a few months since a commercial traveller came to this city, he represented several manufacturers and shipping houses, three German and two English. He stayed in this city two weeks and sold $45,000 worth of goods; he had been about twelve months on his journey through Venezuela, United States of Colombia, Costa Rica and Honduras, and in that time he had sold more than $1,000,000 worth of goods, as he proved to me by his order books. He was going from here to Salvador. Guatemala and Mexico, and said he expected by the time he reached the end of his route to have sold $300,000 more. The great requisites for such a man are ability to speak and write the Spanish language, knowledge of tastes, wants, manners and customs of the people, knowledge of patterns, styles, classes and value of the goods suited to the various markets. I have never heard of an American traveller visiting this part of Honduras, and many I have met in Mexico and South America are utterly unfitted for their position by imperfect knowledge of the language, manners and customs of the people and the principles of business existing in these countries, and a complete ignorance of the style of goods most needed. I think it would be a most valuable and useful addition to your bureau if you could establish a sample room, or, as it might be more properly termed, a commercial museum to display samples, patterns and photographs of all manufactured articles and goods most salable in all the different countries and districts."

MR. MAHLON RICE, of Framingham, Mass., took charge of the mill room at Meyer's rubber factory this morning, in place of Foreman Archer, who returns to his old position in the mill. Mr. Rice is a thoroughly competent man and has an excellent reputation from his former employés and workmen.

WE recently received a pleasant call from Mr. Thomas Caroll, of Bridgeport, Conn., at our office, where our friends are always welcome.

A SYNDICATE has been incorporated under the laws of New Jersey to control recovered-rubber mills in the Eastern States. The incorporators of the company are N. C. Mitchell of Philadelphia, Rudolph Lowenthal of Jersey City, R. M. Bassett of Birmingham, C. E. Murray of Trenton and E. R. Halliday of Lambertville. The capital stock is $200,000. The company has nearly completed arrangements for leasing the mills of the following companies: Philadelphia Rubber Works, of Philadelphia, Lowenthal & Morganstern of Jersey City, Derby Rubber Company of Shelton, Mass., Murray, Whitehead & Murray of Trenton and New Jersey Rubber Company of Lambertville. The officers of the company are: President, N. C. Mitchell; vice-president and secretary, Royal M. Basset; treasurer, William Morganstern.

OUR readers cannot fail to notice the conspicuous announcement from Mr. E. H. Clapp, which appears elsewhere in this issue. Mr. Clapp is the pioneer manufacturer of reclaimed rubber and his products have always been of such uniform excellence as to hold the very front rank of popularity with our most successful manufacturers.

BUCK Bros., local rubber goods dealers in Springfield, Mass., recently made an assignment to Messrs. Lampkin & Fuller of Boston. The statement presented at a meeting of creditors showed liabilities $10,578; assets $11,861. Mr. James Buck thought the firm could pay 65 cents on the dollar. If an arrangement cannot be made the assignees will sell the property to the highest bidder.

THE upper and sole cutters at the Colchester Rubber Company's works having received a large cut in their pay, amounting to between 20 and 30 per cent., sent a very courteous letter to the president and received a courteous reply. After discussing the matter among themselves they came to an agreement that it was not possible for them to earn a living at the prices paid, so they finished their work and then left for other mills. They were all skilled workmen, and most of them old hands in the employ of the company.

The Rubber Market.

THREE matters of interest to the rubber trade have occurred during the month, which are the arrival of Señor Vianna, who is now the Viscount de Gondoriz, the break in the price of rubber and a succession of failures among the manufacturers in Trenton.

The first is important as showing the persistency on the part of Vianna in maintaining his prices 90 cents in face of a continued selling by others of rubber at quotations far below his stated terms, and the arising of a speculative quandary as to the effect of such sales in the immediate future. He maintains that rubber is not dear in view of the laws of supply and demand and that there is nothing in the way of his apparent manipulations alone to cause the prices that he asks for his holdings. His visit to this country is ostensibly to place the trade on a more steady basis, and relieve it from the violent fluctuations that happen in it from time to time.

His views in this matter apparently do not agree with those of the manufacturers who aver that the purchasing power of consumers is not on such a basis as to allow of the prices which he is maintaining. As a result of this divergence of views it is said business is dull and there is no desire upon the part of any one to pursue any other than a hand to mouth policy. The selling of rubber during the month by prominent houses at first sight appears to be a coincidence with his arrival and would look as though there was a definite plan to carry some end.

The parties interested in these sales claim that it is only natural and is a regular market. The rubber sold has been it is said composed of shipments from Europe which has lately been bearish and has really made quotations for us to follow. The sales have been small, no transaction being in large amount. Brokers say that the demand for these amounts is good, and that in a few days there has been a reaction from the lowest prices.

The failures at Trenton have been an absorbing theme, but outside of the locality in which they have occurred they have not been so important as they would at first glance appear. They have caused a careful discrimination in rubber paper, and in this connection credits are rigidly scrutinized.

The market has steadily dropped under the influences bearing upon it from 92 to 77, from which point it has reacted to 81@86, the former price being for new.

Inferior qualities together with Centrals and Africans have not experienced the full measure of the decline that has taken place in fine Pará. It is reported that there are some large lots of Centrals pressing upon the market.

The arrivals during the month have been as follows:

May 13. *S. S. Basil*, 1,082 000 lbs., of which 600,000 was for Liverpool.

May 28. *S. S. Finance*, 66,000 lbs.

June 6. *S. S. Lisbonense*, 143,000 lbs.

June 7. *S. S. Ambrose*, 61,000 lbs.

June 8. *S. S. Seguranza*, 30.000 lbs.

On passage there is the *Clement*, with 168 tons and a steamer whose name is unintelligble in the cable code, with 30 tons. A sailing vessel with 80 tons is on the way to Providence, R. I., and in addition there are 200 tons en route for Liverpool from the Amazon.

The receipts at Pará during May were 640 tons against 660 in May, 1890.

The world's stocks of Pará grades May 31 were 4406 tons, of which Pará holds 600 tons against 200 tons one year ago, United States, 1652 tons against 373 and England 1490 tons against 938.

The deliveries for consumption during the month were in England 205 tons against 210 one year ago, and in the United States 649 tons against 800, a total of 954 against 1090. In 1890 the manufacturers were free buyers, which is not the case this year.

Vianna owns three-quarters of the visible supply of Pará grades, and claims that any manipulation of the other quarter can do him no harm.

The arrivals at Pará so far in June reported by cable of the 12th were 130 tons and prices at which Vianna was buying were reported at 4000 milreis for up river, and 3500 for islands with exchange at 17¾.

Financial matters on the Amazon appear to be getting better, the price of exchange being much lower during the month.

Mail advices from England report a weak feeling in Europe. Fine Pará has been as low as 36d. Borneo was quoted May 31 at 14d@22d, Madagascar 1s. 10d@2s. 8d., Assam No. 1; 2s. 3d @2s. 5d., No. 2, 2s.@2s. 2d., No. 3, 1s. 3d@1s. 8d., Mozambique Red Ball 1s. 10d@2s. 4d., Sausage 2s.@2s. 1d., White Ball 1s. 4d@1s. 10d. and Liver 1s. 9d.

Simpson & Beers, New York, furnish the following statistics for the month ending

May 30, 1891.

Statistics of Pará Rubber.

Stocks of Pará here April 30,						about	3,100,000 lbs.
Receipts	"	"	May			"	975,000 "
Deliveries	"	"	May			"	725,000 "
Stock	"	"	May	31,	1891,	"	3,350,000 "
"	"	"	"	"	1890,	"	985,000 "
"	"	"	"	"	1889,	"	1,185,000 "

Prices for May.

	1891.		1890.		1889.	
	Fine.	Coarse.	Fine.	Coarse.	Fine.	Coarse.
First....	89	59	87	66	65	39½
Highest.	90	59	92	68	67	43
Lowest,.	87	57	87	66	65	39½
Last....	87	57	91	67	66½	42

In the above is not included the receipts of 775,000 lbs. received for re-shipment to Europe, but the deliveries of about 300,000 lbs. exported to Europe, are comprised in the statement. The deliveries for home consumption were small.

The latest New York quotations are;

Para, fine, new	81–83	Sierra Leone	39–45
Para, fine, old	84–86	Benguela	47–49
Para, coarse, new	55–56	Congo Ball	43–44
Para, coarse, old	57–58	Small Ball	42–43
Caucho (Peruvian) strip	47–48	Soft Ball	30–32
Caucho (Peruvian) ball	55–56	Flake, Lump and Ord	26–29
Mangabeaira, sheet	——	Mozambique, red ball	
Esmeralda, sausage	50–52	Mozambique, white ball	
Guayaquil, strip	40–42	Madagascar, pinky	65
Virgin Scrap	——	Madagascar, black	45–53
Carthagena, strip	32–33	Borneo	32–47
Nicaragua, scrap	47–48	Gutta percha, fine grade	140@150
Nicaragua, sheet	45–46	Gutta percha, medium	100
Guatemala, sheet	40	Gutta percha, hard white	100
Thimbles	43–44	Gutta percha, lower sorts	60–85
Tongues	38–39		

The market for manufactured goods is uniformly dull.

Mechanical goods are in fair demand. There is believed not to be much stock in Trenton, and the outcome of the failures has really limited production. Belting is dull. Hose has been active owing to the dry spell. In garden hose prices have been very low owing to a fight among the manufacturers. Electrical goods are dull. The strikes have interfered with building throwing the demand forward to a later time in the year. Hard rubber goods are dull. In druggists' specialties there have been some good orders from Chicago. The price for goring has not maintained the advance.

A YOUNG MAN twenty two years of age, who has had three years' experience making mackintoshes, desires a position at any kind of work in a rubber factory. Address E. Fried, 20 Rutgers Place, New York City.

WANTED—Salesmen for South West, North West and Eastern States to carry a line of rubber clothing, oil clothing, gossamer and mackintosh clothing on commission. A good man can make $25.00 to $75.00 per week. Address giving reference, Smith, INDIA RUBBER WORLD.

WANTED—A thoroughly competent superintendent to take charge of a rubber factory equipped for the manufacture of belting, packing, hose, and all other mechanical rubber goods, also boots and shoes. Apply at once stating experience and references. A first class salary to a competent man Address "B. B." INDIA RUBBER WORLD Office.

FOR SALE—A semi-circular corrugated iron roof, size 16x38 feet; suitable for a boiler or storehouse. Write to or inquire of TYER RUBBER CO., Andover, Mass.

FOR SALE—Complete Rubber plant for gossamer business with sewing machines, etc., or would let with privilege. Address W. F. OSBORNE, Ansonia, Conn.

A POSITION is desired by man who has had seven years experience in reclaiming rubber from clippings, old boots and shoes by the acid process. Thoroughly aquainted with the process of boiling, washing, sheeting and grinding. Devulcanizing with all the latest improvements in the shoddy business. Samples of all kinds sent on request. Best references. Address B. W., INDIA RUBBER WORLD Office.

A YOUNG MAN experienced in the general rubber business, desires a position as salesman in some good house or on the road. Best of references. Address Position, INDIA RUBBER WORLD Office.

ADVERTISER, who enjoys a large and lucrative trade in mechanical goods in Pennsylvania, and adjacent States, is open for an engagement. Has a long acquaintance with his trade, who generally require high grade goods. Can bring unquestioned record, large experience and unstinted energy. Would not object to the South or West, as manager or representative. Address Mechanics, care INDIA RUBBER WORLD.

WANTED—To correspond with some one capable of superintending the manufacture of moulded rubber goods such as springs, valves, gaskets, rings, etc. Located in a large Western city. To the right party there is a future. Address N., INDIA RUBBER WORLD.